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NEXT ANNUAL SESSION, CHICAGO, 1924.

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THE SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY OF THE AMERICAN MEDICAL ASSOCIATION

A RETROSPECT AND A PROSPECT *

WILLIAM B. CHAMBERLIN, M.D.

CLEVELAND

The delivering of an address by a retiring chairman, or president, is an ancient, if not an honorable, custom. Coincident with the origin of this custom, however, there arose another custom, well fitted to neutralize, or mitigate, any too baneful effects which the delivering of such an address might have. So it became also customary for the members of a society to remain away, until the address should have been given, or until such time as the real business of the meeting should have been under way. For the convenience of such discriminating members, the address, as you have no doubt noticed, is always placed first on the program. The latter custom originated, no doubt, later than the first, and was the natural reaction of the oppressed listeners to this last opportunity of a retiring president to inflict himself on his audience. Since "brevity," then, "is the soul of wit and tediousness the limbs and outward flourishes, I will be brief," though I shall make no attempt to be witty.

The glories of otolaryngology have been sung. Its future has been proclaimed. Recommendations for postgraduate teaching have been the themes of at least two of my predecessors. This subject has also been most ably presented in the reports of your committee on postgraduate instruction. My talk, then, will be in the nature of a potpourri, a rehearsal of several matters which it would seem might well be brought before the section at this time. If some there be who may incline to look on such a digression, not as a potpourri, but as a corned beef hash, their discrimination will cause no resentment, and I can only apologize for my inability to bring before you some epoch making discovery. My theme, then, will be "The Section on Laryngology, Otology and Rhinology of the American Medical Association: A Retrospect and a Prospect."

As I look on the names engraved on this gavel, names distinguished not alone in the narrower confines of our specialty, but which have added luster to the whole field of medicine, I realize too well my own shortcomings, and appreciate most fully your forbearance in having chosen me your chairman. "Some are born great, some achieve greatness and some have greatness thrust upon them"; still others become secretaries and, as it were, in association with, or in the shadow of greatness, are permitted to fill their small, though useful, part.

As secretary of the Section on Laryngology, Otology and Rhinology of the American Medical Association, it has been my privilege to serve you for four years, a longer period of service than has ever fallen to the lot of such an officer of this section. With such a continuous service it has been possible to put into practice certain policies, tending, it was hoped, to elevate the quality and character of the programs, and by so doing the standing of our specialty throughout the United States.

During the last four years there has not appeared on our program a single paper on the technic of the submucous resection of the nasal septum or the method of removing tonsils, whether under local or general anesthesia. During this period, no new contribution has been made. Such papers, it was felt, must therefore soon resolve themselves into a presentation of the fundamental differences between tweedle dee and tweedle dum, and prolong the discussion, as well as the meeting, beyond the endurance of human nature. While such drastic action has no doubt inflicted a real hardship on the profession of Gopher Prairie and kindred medical centers, it has had behind it the purpose of elevating our specialty above the level of the tonsilleur and the submucous resectionist.

Our sympathies, however, still go out to the special specialist in a western metropolis, who, after weighing an income of $75,000 a year in his home town, against a probable income of $150,000 from the removal of tonsils and the submucous resection of the septum in an eastern city, at last magnanimously decided to remain where he was at a personal loss of $75,000 a year. Surely, self sacrifice has ever been the distinguishing characteristic of our profession. So, though an effort has been made to extend our specialty beyond the narrow confines of the tonsil and the septum, there has been an attempt, on the other hand, to look on this section as an open forum, before which new ideas could be presented and the author given ample opportunity to defend his ideas against just and friendly criticism. This year we are to discuss in open meeting the effects of the roentgen-ray treatment of the tonsils.

Your Committee on Postgraduate Instruction has been most active and, in conjunction with similar committees from other special societies, has rendered a most notable and meritorious service. Through its influence, not only have steps been taken to provide adequate postgraduate instruction in this country, but this committee has formulated requirements which

* Chairman's address, read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

should be regarded as the minimum for those desiring to enter our specialty.

The Committee on Lye Legislation, under the able leadership of Dr. Chevalier Jackson, is rendering a service no less noteworthy. Already, largely through Dr. Jackson's personal and individual efforts, legislation has been passed in the state of Pennsylvania specifying how each can of caustic alkali, or cleansing powder, shall be labeled, and imposing a fine of $100 for each can sold within the state which does not bear such a label. In addition, any individual injured or poisoned from the contents of such improperly labeled cans may now sue the manufacturer for personal damage. This, like the pure food law, so long prevented by selfish and vested interests, is a triumph for persistent effort and the culmination of more than twelve years of almost ceaseless effort on Dr. Jackson's part. This is but another evidence of the altruistic spirit which distinguishes and glorifies medicine. It should receive the most heartfelt commendation and expression of appreciation, not only from the medical profession, but also from the public, for which this effort has been made and which, in the last analysis, is its beneficiary.

Under the leadership of Dr. H. Marshall Taylor, a law, similar to the Pennsylvania law, has been enacted in the state of Florida. These are opening wedges. They should be the forerunners of similar legislation in every state in the Union.

The Committee on the Education of the Deaf Child, under the chairmanship of Dr. Charles W. Richardson, has had before it, first of all, the insistence on oral instruction *exclusively* for the deaf, and, secondly, the codifying and tabulating of laws in states where such laws exist, in the hope that ultimately laws of similar scope and requirements may be enacted in all the states.

Any review of the activities of the section for the last four years would be incomplete without reference to the work of the Committee on Local Anesthesia. In this your secretary performed so inconspicuous a part that it can be referred to without egotism. For this report the section is indebted to Dr. Emil Mayer of New York, ably assisted by Dr. Ross Hall Skillern of Philadelphia and Dr. Robert Sonnenschein of Chicago. The compilation of the report involved an amount of work which no one unacquainted with the activities of the committee can appreciate. It resulted in the formation of a commission, representing the entire American Medical Association. Of this larger body Dr. Mayer is also chairman.

The work of the Committee on Necrology has been a labor of love. For this record of the achievements of our former members we are indebted to our chairman, Dr. Emil Mayer.

Such is the record of our section during the preceding four years. What for its future? In this connection there are two subjects which I wish to bring before you for consideration.

As one views the progress which medicine has made within the last fifty, the last twenty-five, yes, within the last ten, or the last five years, the wonderful development of specialization is amply justified. This justification, however, is more apparent to the profession than to the laity. The latter are only too prone to hark back to the day of the family practitioner who attended them from the cradle to the grave and to look on modern specialization as an ultrarefinement, in most instances unnecessary. This attitude is due largely to ignorance on the part of the laity as to what modern medicine really means, and to a lack of appreciation of the inability of any mere mortal, at the present time, to make himself proficient in anything more than a very limited field. Is not this attitude on the part of the laity due to the failure of the profession to inform the public, their clients, as to what medicine has accomplished and is accomplishing? In this connection the recent articles, in the lay press, of Dr. Morris Fishbein, of the editorial staff of THE JOURNAL, on diabetes would seem to be a move in the right direction. Is there not ample justification for some correct information, in an attempt to stem the tide of *misinformation* with which the public is constantly deluged?

So, at the risk of unpopularity, I shall venture to be ultraprogressive and to suggest even further specialization, or, as it were, special specialization. I trust that the reason may be self evident when I refer to the fields of plastic surgery of the face and bronchoscopy. Samuel Johnson, when discoursing on the True Art of Friendship, relates how "it was once confessed to him by a painter that no professor of his art ever loved another." He adds that "this declaration is so far justified by the knowledge of life as to damp the hopes of warm and constant friendship between men whom their studies have made competitors, and whom every favorer and every censurer are hourly inciting against each other. The utmost expectation that experience can warrant us is that they should forbear *open* hostilities and *secret* machinations, and when the whole fraternity is attacked, be able to unite against a common foe. Some, however, though few, may perhaps be found in whom emulation has not been able to overpower generosity, who are distinguished from lower beings by nobler motives than love of fame, and can preserve the sacred flame of friendship from the gusts of pride and the rubbish of interest." These observations might be equally applicable to the medical profession.

With the limited amount of material in the fields of plastic surgery or bronchoscopy, it is manifestly impossible for any one to become proficient, if the opportunity for doing this work is divided among a large group of men. The public is thereby the loser and the sufferer. In each community, therefore, cannot two or three individuals be decided on who, as a result of training, proficiency or opportunity, are especially qualified and to whom such cases shall be referred? The work of either of these fields demands special training and ability. In bronchoscopy there is required, in addition, an expensive armamentarium, as well as special hospital facilities. In communities where there is located a well organized medical school, such an arrangement could easily be put into effect. In other communities its accomplishment might be more difficult.

For the last twelve years there has been in existence the American Board for Ophthalmic Examinations. Its work has been most satisfactory, and has had a decided influence in elevating the standards of that specialty. It has been suggested that such a board be established for the specialty of otolaryngology. In the language of one of the members of this board, "it is more important to have rigid requirements for otolaryngologists than for ophthalmologists. The reason for this is patent. Novices will attempt all sorts of operations on the nose, throat and ear, when they would not think of performing an operation on the eye, even though they might fit glasses and attempt to treat all the commoner eye diseases. Many men with no training of any kind whatsoever feel perfectly free to attempt tonsil

and adenoid operations, and practically all of them multilate the turbinates to relieve obstructed breathing, no matter from what cause. They may steer clear of mastoid work, but even there they oftentimes plunge in."

This board is made up of three members each from the American Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, and the Section on Ophthalmology of the American Medical Association. Their term of office is three years, so that each year the terms of three examiners expire. Certificates from this board are now required before a candidate is considered for membership in the American Ophthalmological Society or the American Academy. Men of good record, who have practiced the specialty for fifteen years, are given a certificate on their record. Younger men are given an examination which is oral, written and practical. This board has conducted to date twelve examinations and given certificates to 450 individuals. With the splendid record of the American Ophthalmological Board as an example, it might seem advisable that a committee from this section be appointed to confer with similar committees from the American Laryngological, the American Otological and the American Laryngological, Rhinological and Otological Society, relative to the formation of a similar board.

I cannot close this address without repeating to you a quotation which has but recently come again to my notice. It is from Robert Louis Stevenson's dedication to Underwoods, and reads:

> There are men and classes of men that stand above the common herd: the soldier, the sailor, and the shepherd not infrequently; the artist rarely; rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited in the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.

I wish again to express my appreciation of the honor which you have conferred on me. The record of our specialty in the past has been a record of achievement; achievement because of the effort of painstaking, unselfish men to make themselves better physicians and by so doing to help more efficiently the public whom they serve. May the years to come bear not only for our specialty, but for this section, as well, a record of still greater achievement.

Treatment of Tumor of Colon.—The fact that the surgeon is now able to operate upon patients with tumors in the colon before serious obstruction has occurred has entirely altered the type of operation that is performed, and greatly improved the results. It will be generally agreed that to attempt to resect or anastomose the large bowel in a patient suffering from any degree of obstruction is wrong, and that the proper treatment is first of all to relieve the obstruction and only to attempt to resect or anastomose the bowel after all obstruction has been relieved. Further, most surgeons now agree that cases of obstruction in the large bowel are best treated by draining the cecum.—J. P. Lockhart-Mummery: *Proc. Roy. Soc. Med.* **16**:70 (Aug.) 1923.

DEVELOPMENT OF GASTRO-ENTEROLOGY AND PROCTOLOGY IN THE UNITED STATES

A BRIEF HISTORICAL SKETCH *

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I start with gastro-enterology, though, as will be seen presently, proctology was the first to attract specialists. Indeed, one of its own disciples—Einhorn [1] in his latest edition—remarks, after the foundation was laid by Beaumont, there was a state of quiescence for nearly half a century until Küssmaul (July 22, 1867) applied the stomach tube and pump in the treatment of dilatation of the stomach. So the history of gastro-enterology will greatly resemble the packets of blank paper which the political parties get out during presidential campaigns, containing the alleged records of their opponents.

There is little to chronicle, I find, in the eighteenth century, though one of the earliest medical publications in this country (1745) was by Thomas Cadwallader: "An Essay on the West Indian Dry-Gripes," which modest effusion of forty-two pages had the honor of being printed by the immortal Benjamin Franklin. A few years later, an anonymous author published a work at Boston with the flippant title of "A Treatise Proving that Most of the Diseases Incident to the Fair Sex are Owing to Flatulencies Unseasonably Vented."

Toward the end of the eighteenth century, the far-famed Benjamin Rush dominated American medicine; of the rival British schools headed by Cullen and Brown, respectively, he adhered to the latter. The following extract gives some idea of the notions on etiology prevailing at that time:

> All ordinary fevers being located in the blood vessels, it follows, of course, that all those local affections we call . . . inflammations of the liver, stomach, bowels . . . are symptoms only of an original and primary disease in the sanguiniferous system.

As a corollary, a "Defense of Bleeding as a Remedy for Certain Diseases" occupies about eighty-six pages of his "Collected Works," and he would seem to have preceded the French clinician Broussais as the "prince of bleeders."

In the beginning of the last century, the American profession depended largely on works imported from Europe until these began to be republished here. The earliest two works on our branch that I can find in the Index Catalogue of the Surgeon General's Library, as reprinted, are Johnson's "Essay on Morbid Sensibility of the Stomach and Bowels," Philadelphia (1827); and, eleven years later, from the same city, Abercrombie's "Pathological and Practical Researches on Diseases of the Stomach."

To get some idea of the amount of knowledge available on gastro-enterology, I consulted four works on practice, embracing the middle third of the last century, and began with one by the Philadelphia obstetrician Dewees.[2] As the title page carries the information: Comprising Most of the Diseases Not Treated of in the "Diseases of Females" and "Diseases of Children," we expect the seventeen chapters to include a miscellaneous

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* Chairman's address, read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Einhorn, Max: Diseases of the Stomach, Ed. 6, New York, 1920.
2. Dewees, W. P.: A Practice of Physic, Ed. 2, Philadelphia, 1833.

lot of information, nor are we disappointed. In addition to diseases of the eyes, urticaria, gonorrhea, cystitis and what not, we find accounts of intestinal diarrhea, dysentery, enteritis and colic. There is not a single gastric affection to be found, with the exception of hematemesis.

The next one, Eberle's [3] "Practice" enjoyed great popularity in its day, as shown by the fact that the edition I searched is the fourth. Of 1,159 pages, not 10 per cent. are devoted to gastro-enterology. There are ten pages on gastritis and eighty-six on chronic diseases of the alimentary canal, comprising indigestion, diarrhea, colic, ileus, constipation, intestinal worms, hemorrhoids and jaundice.

Another popular work of the time was Wood's "Practice," and the fifth edition has 1,792 pages, 150 of which are allotted to inflammation of the stomach, "irritation" of the stomach, indigestion, intestinal diseases, worms in the alimentary canal, lead colic and stricture of the rectum.

While over a quarter century had elapsed since the French pathologist Cruveilhier differentiated gastric ulcer from cancer and gastritis, the account of simple ulcer has been added as a footnote under chronic inflammation, yet covering nearly four pages of fine type. Nevertheless, it is a very creditable production, as shown by the following excerpt:

> Prognosis.—This is generally favourable when the patient can be placed under proper influences. There is nothing malignant in the character of the ulcers. Two sources of danger, however, exist, which the utmost care cannot always avert; hemorrhage, namely, and perforation from accidental causes; and even when cicatrization has taken place, there is liability to return of the ulceration, and, as before stated, even greater liability in such a case, than originally, to the two dangers referred to. Another source of inconvenience and of ultimate danger in cases in which the ulcer is seated at the pylorus is the contraction attendant on cicatrization. This may cause stricture of the pylorus, with consequent distension of the stomach, and various digestive disorders, which only great caution in the regulation of the diet can obviate.

Professor Wood adds:

> During more than twenty years in which I have been physician to the Pennsylvania Hospital, I have not met with a fatal case of simple ulcer of the stomach.

The prognosis for gastric cancer was gloomy, indeed:

> Treatment: . . . must be entirely palliative. All that can be expected is to protract life and alleviate suffering. For this purpose nothing is so important as to regulate the diet properly. . . .

With the first edition of Flint's [4] classic "Treatise on the Principles and Practice of Medicine," we begin to be on solid ground. Of the 867 pages, about one quarter is taken up with inflammatory and structural affections of the alimentary canal and stomach, functional affections, with diseases affecting "the solid or collatitious viscera of the abdomen." (He still includes conditions no longer thought as coming within the province of the internist, e. g., strangulated hernia, volvulus and intussusception.)

With later editions, and later works by other authors, the increasing amount of attention given to gastro-enteric diseases is shown by the large amount of space given to their consideration.

In 1829, Cruveilhier for the first time clearly differentiated ulcer of the stomach from ordinary gastritis and cancer, and not long afterward Rawson [5] reported a case of perforation. This was in a man, aged 36, and at the necropsy, a perforation, seven-eighths inch long, was discovered on the anterior surface of the organ.

As regards typhoid fever, it seems probable that W. W. Gerhard [6] of Philadelphia had distinguished it from typhus before the French clinician Louis, but was too late in publishing his findings. In this connection, Nathan Smith, in his famous "Practical Essay" of 1824, treated this disease by milk diet, plenty of water, keeping the patient in cool, well ventilated rooms, and, when the temperature was very high, drenching the patient with cold water—the whole treatment very similar to that of our own time.

A long time after Smith, yet deserving of honorable mention, is Woodward's account of his experience with the "Chief Camp Diseases of the U. S. Army as Observed During the Present War."

So far as anatomy and physiology are concerned, there seems little worthy of reference, with the exception of the extraordinary work of Beaumont. Neill [7] of Philadelphia made some investigations on the structure of the gastric mucosa; and Austin Flint, Jr.,[8] as well as J. C. Dalton, made some observations on the cholesterin function of the liver.

Since the discovery of the roentgen ray, the well known investigations of Cannon, Case and many others have revolutionized our knowledge of gastro-intestinal functions, but I have time only for this bare mention.

I now come to William Beaumont, "pioneer physiologist" of the United States. It was on June 6, 1822, consequently just over a century ago, when, stationed at Fort Mackinac, he was called to attend Alexis St. Martin, a youth of 19, who had received a load of duck shot in the left side, at a distance of only 2 or 3 feet from the muzzle. The stomach was lacerated by a spicule of the sixth rib, and part of the contents had escaped into the clothing when first seen. After a tedious convalescence, the patient was able to be up and about.

It seems that for some time the possibilities for investigation did not occur to Beaumont; finally, in 1825, he notes in his journal:

> This case affords an excellent opportunity for experimenting upon the gastric fluids and process of digestion. It would give no pain, nor cause the least uneasiness to extract a gill of fluid every two or three days, for it frequently flows out spontaneously in considerable quantities. Various kinds of digestible substances might be introduced into the stomach, and then easily examined during the whole process of digestion. I may, therefore, be able hereafter to give some interesting experiments on these subjects.

Just about the time at which he was preparing to start his investigations, the patient absconded, but in about four years was induced to return, and was supported by Beaumont, together with his family (he having married in the meantime). Two series of observations now began, lasting altogether—roughly speaking—about eighteen months. The result of these, to quote the inscription on the monument erected at Fort Mackinac in 1900, "brought fame to himself and honor to American medicine. By the irony of fate, the ingrate

3. Eberle, John: A Treatise on the Practice of Medicine, Ed. 4, Philadelphia, 1838.
4. Flint, Austin: A Treatise on the Principles and Practice of Medicine, Philadelphia, 1866.
5. Rawson, L.: Am. J. M. Sc., August, 1830.
6. Gerhard, W. W.: Am. J. M. Sc. **19**: 289, 1837.
7. Neill, John: Am. J. M. Sc., January, 1851.
8. Flint, Austin, Jr.: Am. J. M. Sc., October, 1862.

St. Martin survived his surgeon and benefactor by twenty-eight years.

In the appendix of his life of Beaumont, Myer [9] has compiled a dozen or so previous cases of gastric fistula, only one or two having been examined as to the physiology of digestion, and that very crudely, though Spallanzani had made animal experiments, as did Young, the latter, so Friedenwald [10] tells us, being a student from Maryland, who submitted a thesis to the University of Pennsylvania on "An Experimental Inquiry Into the Principles of Nutrition and the Digestive Process," using frogs on which to conduct his experiments.

APPENDICITIS

Before proceeding with the next section, I must make some notice of appendicitis, the "American disease," as our continental brethren sneeringly termed it years ago.

Away back in 1759, Mestivier, an almost legendary name, cut down on an abscess in the right groin. Necropsy showed the appendix perforated by a pin. In the next ninety years, similar perityphlitic abscesses were occasionally operated on, until, April 17, 1848, Hancock of England did not wait for fluctuation, but opened the purulent focus on the fifteenth day, with recovery. As a consequence, he advised early evacuation, stating that death often ensues before fluctuation is perceptible. But, as is often the case, this sage advice went unheeded, apparently, for nearly two decades, when Parker of New York (1866) repeated the early operation, with equal success.

So far, we have been dealing with evacuation of abscesses of appendicular origin. Probably the first operation on the appendix itself was that done by Symonds of London, Aug. 24, 1883. A calculus in the appendix having been diagnosed by Mahomed the internist, it was extracted by the surgeon, and the incision closed by Lembert sutures, with recovery. A few other cases, those in which the appendix was not removed, are recorded in this country as well.

Finally, Krönlein [11] of Switzerland, Feb. 15, 1884, was apparently the first to remove the appendix for acute inflammation; he was followed by Weir of New York, in 1886, and a few others, all of whom, however, were unsuccessful. On the contrary, Hall,[12] also of New York, removed the appendix, which was found in the hernial sac of a youth of 17. Not long after, Sands and Morton,[13] of New York and Philadelphia, respectively, profiting, no doubt, by Fitz's famous paper, in which the term "appendicitis" was coined, made a successful preoperative diagnosis of acute appendicitis and intervened also successfully.

PROCTOLOGY

In 1811, and long before the reprints of the European works on gastric affections, there was published at Philadelphia, the medical center of the country, a little book by Thomas Copeland: "Observations on Some of the Principal Diseases of the Rectum."

The care of affections of the rectum in the United States long fell to the lot of the general surgeons, such as Physick, who recognized what he called "preternatural pouches"; these are the same as the "encysted" or sacculated rectum of the anatomist Horner, and the sacculitis of today. But early in the last century, George Bushe had acquired sufficient experience to enable him to write an exceedingly creditable treatise on the diseases and malformations of the rectum and anus, illustrated by a volume of plates. Bushe was an Irish graduate who was recommended by William Lawrence of London for the chair of anatomy in Rutgers College, New Jersey. He arrived in New York in 1828, but did not survive long.

Bushe's "Atlas" is noteworthy in that it was illustrated by Dr. Westmacott, who later on obtained greater fame by the pictures for the first edition of Gray's "Anatomy," much of the success of which was due to the illustrations with the names of the structures on them, a great and laudable novelty. I am fortunate enough to possess two copies, one with plain plates, the other colored by hand, and have installed them in the Scientific Exhibit.

William Bodenhamer seems from an early date to have specialized in proctology, first in Louisville, then in New Orleans, and, for years before his death, in New York. Beginning with his classic account of congenital malformations of the rectum and anus in 1860, in addition to three other books, he was the author of a host of articles published in journals. He died several years ago at the ripe age of 97. In the past, Bodenhamer was looked down on because long ago he advertised in the daily papers, but I believe this was not unusual seventy-odd years ago, and much can be forgiven him for his books and articles, alike characterized by untiring industry, profound erudition and sound judgment based on an enormous experience.

While engaged in the preparation of my forthcoming book on "Diseases and Injuries of the Rectum, Anus and Pelvic Colon," I was decidedly surprised—and that agreeably—to find that the first American case of megacolon was placed on record (1867) by a former fellow citizen of Chicago, Dr. William Lewitt,[14] at that time demonstrator of anatomy in Rush Medical College. It was published as "Enlargement of the Colon." The patient, a man of 21, had had no bowel movements for three weeks; the abdomen was enormously distended and so tense that no viscera could be distinguished. There was a history of a previous attack, lasting a fortnight, at about the age of 12; since that time there had been a similar attack about once in a week or ten days. Prior to being seen by Lewitt, he was under the care of a "spiritual doctor," who affirmed that he was suffering from "windy dropsy." When seen by our author, flatus could be passed only by standing on the head and hands; enemas had no effect, nor had laxatives. Death occurred during a sudden attack of abdominal pain some six days after being first seen. Necropsy revealed several perforations in the colon, with gas and soft feces in the abdomen. The pelvic colon contained more than a pailful of soft feces.

Another early case from a nearby town, reported by Harrington [15] in 1878, nearly a decade prior to Hirschsprung, concerned a man, aged 51, who for the past ten years had been affected with "bilious colic." Death here was even speedier, occurring in about sixty-six hours. At necropsy, the pelvic colon was immensely distended, reaching to the ensiform cartilage. While it contained no feces, the capacity was about a gallon, and the walls were thickened.

9. Myer, J. S.: Life and Letters of Dr. William Beaumont, St. Louis, 1912.
10. Friedenwald, Julius: Tr. Am. Gastro-Enterological A., 1909.
11. Krönlein, R. U.: Arch. f. klin. Chir. **33**: 514, 1886.
12. Hall, R. J.: New York M. J., June 12, 1886.
13. Morton, T. G.: Tr. Coll. Physicians, Philadelphia, 1887.
14. Lewitt, William: Chicago M. J., August, 1867.
15. Harrington, H. L.: Chicago M. J. & Exam., April, 1878.

It seems to me that "megacolon" is a much more fitting appellation for the condition than Hirschsprung's disease, for as far back as the late seventeenth century Ruysch, the Dutch anatomist, described an "enormous extension of the colon" in a 5-year-old girl, which is probably a case of megacolon. And as is well known, it was encountered by Parry [16] (1829) in an adult, and by Billard [17] in the same year in a child, besides being figured by von Ammon [18] in his Atlas.

After some desultory efforts, the American Proctologic Society was organized in 1899, having been preceded two years by the American Gastro-Enterological Association. The former has since held yearly meetings, and published an annual volume of transactions. The present membership numbers thirty-four active, and twelve associate, and seven honorary members.

In 1916, the Section on Gastro-Enterology and Proctology was organized in the American Medical Association, and the first session of the section was held at the New York session of the parent body in 1917.

31 North State Street.

PRESENT-DAY PROBLEMS IN REGARD TO GALLBLADDER INFECTIONS

A STATISTICAL INQUIRY *

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SAN FRANCISCO

Speaking broadly, cholecystitis is a disease which begins in youth but is first recognized and properly treated in old age. As we shall see later, in a group of men and women coming to operation at an average age of 44 years, the duration of symptoms averaged nineteen years, an interval during which there were many courses of treatment, most of them directed against such vague disorders as "nervous indigestion," "flatulent dyspepsia," and "intestinal autointoxication." Now, we might say with Naunyn [1] that the "process of gallstone formation does not give rise to any symptoms," and that those which appear are "merely the manifestation of chronic dyspepsia;" or we may more logically assume that the symptoms observed do represent the earlier stages of cholecystitis. If that be the case, surely the sensible thing to do is to analyze very carefully the early histories of the persons who now undoubtedly have gallstones so that we can learn to recognize the disease in its incipience, and not have to wait until the appearance of colic and jaundice make the diagnosis plain even to a lay observer.

That we may visualize the problem more clearly, let us think for a moment of the cohort of men and women who are going to have their gallbladders removed in 1942, i. e., nineteen years hence If history repeats itself, they must be entering our offices now with their first attacks of more or less masked cholecystitis. One reason why we are not likely to think of that disease is that some of these patients are under 10; some are in high school, and many are in their twenties.

What chance is there of diagnosing their troubles now? We believe that it can be done in many cases if we will only use the information already at hand. The great importance of the subject will be seen when we remember that every tenth old woman coming to necropsy has gallstones, and that there must be many more with cholecystitis without stones. The existence of such a group has begun to be recognized in the last three years; and more and more acalculous gallbladders are being removed.

This paper summarizes the results of a study instituted about three years ago by one of us (W. C. A.) in an effort to map a course between the Scylla of lazy or cowardly waiting and the Charybdis of needless operating. It has always seemed to him that no man can speak confidently about a series of borderline gallbladder cases unless he has, in every instance, taken a very careful history; has made a complete physical examination; has supervised or done the roentgen-ray and laboratory work; has seen the operation; has consulted closely with the bacteriologist and the pathologist, and has corresponded afterward with the patient to see what results have been secured. Unhappily, even then, doubts will often remain as to the correctness of a diagnosis.

In all, sixty case records have been abstracted and their details charted for the study. We have serious doubts about the correctness of the diagnosis in two cases. Nineteen, or 33 per cent, of the remaining quite definite cases of cholecystitis were marked by the presence of stones. The men and women with stones averaged 49 years of age, and those without, 41 years. There were nineteen men and forty-one women. Seventeen of the women had no children.

THE HISTORY

The first and most important factor in the diagnosis of early cholecystitis is a most careful and complete history. One must get an idea of the severity of the trouble not only during the weeks preceding the first consultation but also in the past. Forty-eight out of the group here studied were more or less incapacitated for work, and many were ready to accept operation or anything which would end their sufferings.

Pain was a common symptom, complained of by 95 per cent. of the sufferers. In many it was typical, beginning to the right of the epigastrium and radiating into the right scapular region. In five, the pain radiated mainly into the left part of the back; in seven it was between the shoulder blades, and in five it was in the right side of the neck.

It is always helpful to find out whether or not the patient is wakened out of his sleep by pain, distress or bloating. That is a fairly sure sign that the trouble is not due to nervousness or to psychic impressions. Fifty-five per cent. mentioned this nocturnal distress.

Very helpful and characteristic also are the patients' statements to the effect that, although they have fine appetites and are hungry, they are afraid to eat. It is valuable because it is quite pathognomonic of cholecystitis, and because it testifies eloquently to the reality and severity of the suffering which is so dreaded. However, if one questions these people further, he will generally get the admission that it really does not make

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16. Collected Works of C. H. Parry, London, 1825.
17. Billard, C. M.: Traité des maladies des enfants nouveau-nés, Paris, 1837.
18. Von Ammon, F. A.: Die angeborenen chirurgischen Krankheiten der Menschen, Berlin, 1842.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* From the George Williams Hooper Foundation for Medical Research, the Department of Medicine, and the Department of Pathology, University of California Medical School.

1. Naunyn: A Treatise on Cholelithiasis, translated by Garrod, London, 1896, p. 55.

much difference when or what they eat. If they are due for an attack, they will get it even if they are living on tea and toast.

Only one out of five had ever had anything like colic. Tenderness to the touch or soreness in the right side on jolting, jarring or reaching was often present, either as a constant symptom or as a transient one after acute exacerbations. It was complained of in 72 per cent. of the cases. Patients who drive in from the country in an automobile should always be asked how they stood the trip.

Very important also is the reverse peristalsis syndrome which one of us has described elsewhere.[2] It is unwise to make the diagnosis of cholecystitis on a history of right-sided pain if most of the symptoms of this syndrome are wanting. Vomiting was a more or less prominent symptom in half of the cases. It may come only with severe attacks or with sick headaches. Regurgitation was noted in twenty-one cases. Acid regurgitation, "heartburn" or "acid stomach" was often a prominent symptom, and was noted thirty-six times. The carrying about of soda by a person should always, in our opinion, suggest to the physician that something is radically wrong in the abdomen. Nausea is not infrequent, and sometimes is the main source of annoyance. It was complained of thirty-two times. Belching is one of the earliest and most constant symptoms throughout the long course of the disease. Forty suffered with it. Thirty-nine complained of bloating, which was sometimes so severe that they would have to rush to their rooms and disrobe.

Some of the symptoms just enumerated are grouped by the patient under the term biliousness. With the attacks of biliousness there is often severe and prostrating headache, and this is not infrequently the reason for the patient's seeking a physician.

Some of these persons get sallow with their "bilious spells," or they are sallow most of the time. In some cases the sallow tint may be hereditary and associated with a peculiar hair color, but in many instances we should probably attach to it a greater significance than we now do. In this series it was mentioned sixteen times.

Actual jaundice is not a very common symptom even in stone carriers; and those who report a high incidence of it in their practices are probably confessing their diagnostic ineptitude; i. e., they wait too long and diagnose only the oldest cases. It had been present at some time in 27 per cent. of our stone cases, and in 19 per cent. of those with acalculous cholecystitis. Only extensive statistics based on long life histories will enable us to say what correlation there is between "catarrhal jaundice" in youth and cholecystitis in later life. In several of our cases the early jaundice probably did mark the beginning of the chronic disease.

A history of clay colored stools can be obtained in only a few cases, and then it is of doubtful value.

"Dopiness" is a not infrequent symptom (17 per cent.), and often leads to the diagnosis of "autointoxication." It is sometimes associated with dizziness (noted in 33 per cent. of the series) that is often severe enough to bring the patient to the physician. Several of our patients were referred for Bárány tests, and the otologist found a "toxic disturbance of the labyrinth." A surprisingly large number of our patients were more or less deaf.

One of the surprises from these statistics is the great frequency with which constipation was encountered; i. e., in 60 per cent. of the cases. Some may say that we have here one of the causes of cholecystitis, but it seems more probable that it is the result of the marked tendency to spasm in the digestive tract which the roentgen ray so often shows us in these cases. It is suggestive also that in several instances the constipation disappeared after the cholecystectomy. Gallbladder disease will have to be thought of as a possible cause when severe constipation with digestive upsets appears in strongly built young men and women.

Attacks of diarrhea were mentioned by a few of the patients (8 per cent.). It may be due in some instances to the achlorhydria which is so common with cholecystitis.

Hemorrhoids were encountered in at least one third of the patients; their presence, therefore, may have some diagnostic value.

Attacks of fever and chills are encountered mainly in the older patients with stones and phlegmonous cholecystitis. Some of the histories in this series show, however, that when fever is present in the earlier stages, the diagnosis between gallbladder disease and a smoldering pulmonary tuberculosis with digestive upsets and a right-sided pleurisy is very difficult or impossible.

A history of typhoid fever was obtained in only seven of our cases. This infection seems to damage the gallbladder to such an extent that other saprophytic organisms, such as the streptococci of the mouth, can get into it and maintain a more or less continuous residence. A history of other infections, such as sinusitis, peritonitis and appendicitis, is much more frequently obtained and is probably very significant from an etiologic standpoint. More than half of these persons had had appendicitis; five had had peritonitis; seven had had repeated attacks of sinusitis; three had had pneumonia; eight had bad teeth. In all, thirty-three out of the sixty gave a history of acute or chronic infections.

A history of pelvic disease, tumors, pus tubes, abortions or retroversion was obtained from 60 per cent. of the women, and many had been operated on. One out of five had, or had had, fibroids of the uterus. These fibroids seem to take the place of multiple pregnancies in predisposing many women to cholecystitis.

Arthritis was complained of more or less in seventeen cases (28 per cent.), and its presence may therefore be suggestive diagnostically.

Four women out of the series had had the right kidney stitched up, with more or less temporary relief. The diagnosis between pain due to cholecystitis and that due to a floating kidney is very difficult because the two conditions so commonly exist side by side. In several cases there seemed to be some relation between the cholecystitis and a right-sided pyelitis.

The family history is of interest because heredity seems often to be a factor in the etiology. It is hard to say much about it, however, because the disease is so common that we must expect to find a good many relatives afflicted with it.

A history of nervousness, nervous breakdowns, and marked depression was obtained in half of our cases. The fact that a number of these persons were cured or greatly helped by the operation should make us wonder how many of our "neurasthenics" and *bêtes noires*, with their attacks of mucous colitis and their dietary phobias, have cholecystitis. It must not make

2. Alvarez, W. C.: The Syndrome of Mild Reverse Peristalsis, J. A. M. A. **69**: 2018 (Dec. 15) 1917.

us forget, however, how dangerous it is to promise anything to these people, even when seriously diseased organs are found and removed.

THE EXAMINATION

The most important finding is that of a tender liver edge. This was observed in forty cases. It is hard to say why it was absent in some of the patients with stones and fairly acute symptoms. The gallbladder could be palpated only in the severest cases in which a mucocele had developed following closure of the cystic duct. Fourteen had more or less heart trouble. Some of it was associated with hypertension, but a good deal of it was due probably to the infection arising in the biliary tract. In one case, that of a powerfully built young man with *Streptococcus viridans* in the gallbladder wall, the myocarditis cleared up very rapidly after the operation. Pelvic disease must always be looked for, as, when found, it greatly increases the probability that cholecystitis is present.

LABORATORY TESTS

In our opinion, the Meltzer-Lyon diagnostic test has been quite discredited and is not worth spending time on. As will be noted later, the bile was sterile in 71 per cent. of the cases; and it was generally so normal in appearance that its examination would not have helped us toward a diagnosis.

ROENTGEN-RAY EXAMINATION

There would seem to be no reason why a normal or a moderately thickened gallbladder should show on a plate, no matter how well it is taken. Stereoscopic plates were taken with the Bucky Potter diaphragm in forty of our cases. A fairly definite shadow appeared in seventeen, and a somewhat suspicious one in six. In a number of these, this shadow probably did not originate in the gallbladder because that organ was not found to be thickened or visibly diseased at operation. Furthermore, the thickest gallbladder found at operation did not appear clearly on the plates. This shows that one cannot attach great importance to such shadows, even when they appear quite distinctly beside that of the kidney.

In three out of the nineteen cases with "stones," the concretions were so small and mudlike that they could not be expected to show on a plate. In four other cases, stones were not looked for. That leaves twelve cases in which plates were taken and carefully studied. Stone shadows were definite in six, or in 50 per cent., and they were strongly suspected in three of the remaining six cases. To keep us humble, however, the surgeons were unable to find stones in three cases in which the plates showed quite typical shadows. Fortunately, no harm was done, as two of the women had very definite cholecystitis, and the other one was cured of her symptoms by an appendectomy and a uterine suspension.

George and Burnham[3] are finding it very helpful to look for indentations of the barium filled duodenum by the distended gallbladder. It is hard to see why this should generally mean disease in the organ, but they report a large degree of correlation between this finding and that at operation. It must be confessed that the more the senior writer sees at operation of the normal appearing but definitely diseased gallbladder, the more hopeless he feels as to the roentgenologist's ability ever to help us much in diagnosing early cholecystitis, unless he does it by observing changes in the activity of the neighboring stomach and bowel.

To our surprise, we find that gastric stasis is unusual in cholecystitis, and, when present, it suggests some complication such as ulcer or appendicitis. The stomach was empty in six hours in forty-three, or 78 per cent., of the fifty-five cases in which we could see no such complication. Some of the six hour residues observed seemed to be due to the peculiar antral spasm which was seen in nearly a third of the cases. Cardiospasm and regurgitation of material up the esophagus were also seen in just a third of the cases. In one case it was so severe as to stop all swallowing, and after five days the patient was driven to operation. Puckerings of the stomach and duodenum, suggesting adhesions, were found in 17 per cent., but were not always confirmed at operation. Similarly, adhesions were noted sometimes at operation when the roentgen ray showed no sign of them. It was surprising to find marked ileac stasis in 62 per cent. of the cases.

The spasmodic contractions seen here and there in the tract with the roentgen ray may be due to a spread of nervous stimuli, or perhaps to an actual infection of the muscle layers in the stomach and bowel. They may persist, disappear and return, or develop de novo after the removal of the gallbladder.

The roentgen ray is often very helpful, not because it shows the diseased gallbladder, but because it rules out other diseases of the digestive tract.

In a few cases the large size of the liver shadow prepared us for the finding of marked inflammatory changes in that organ, and warned us against giving too hopeful a prognosis.

THE FINDINGS AT OPERATION

Gross disease of the gallbladder, definite adhesions to it, and stones were found in 64 per cent. of the cases. In the others, the gallbladder had to be removed, mainly or entirely, on the strength of the history. In most cases, however, certain suspicious signs were present. Enlarged glands on the cystic duct were found in more than 60 per cent. A few were removed and found to contain pathogenic organisms. More or less marked signs of cirrhosis of the liver or of perihepatitis were found in a great many of the cases. White patches and lines radiating out from the gallbladder notch are sometimes very striking, and are due probably to repeated attacks of local inflammation, not severe enough to produce lasting adhesions of the bowel to the liver and gallbladder. Pancreatic enlargement and hardening, or pancreatic cancer, was found in only a few. Duodenal ulceration brought the patient to the table in three cases, and was a complication in a fourth. We believe now that the failure to remove a badly diseased but harmless looking gallbladder may account for many of the poor results obtained after gastro-enterostomies in these cases.

In every case a cholecystectomy was done, as we feel that a drainage operation is seldom justified, either theoretically or pragmatically.

CULTURES OF THE GALLBLADDER AND BILE

The types of bacteria found are listed in the accompanying table.

Pieces of the wall were ground with sterile sand, and the triturates were inoculated into Avery tubes and streaked on blood agar plates.

3. Burnham, M. P.: Am. J. Roentgenol. **10**: 105 (Feb.) 1923.

It will be seen that the wall is much more often infected than the bile. The difference would probably have been even more striking if the bile had been removed before the gallbladder was seized by the surgeon and crushed here and there by hemostats. The percentage of infected gallbladders is higher among those with stones than in those without. It is also highest in those cases presenting the severest and most acute symptoms. Only one woman had bacteria in the bile and not in the wall. It was hard to understand sometimes why markedly diseased gallbladders were sterile. Possibly, however, if the patients had been operated on during a period of exacerbation, bacteria would have been found in profusion.

The infection of the wall and not of the bile agrees with the finding of the pathologists that the mucous membrane is generally normal in appearance, and that most of the accumulations of lymphocytes are in the muscle or in the subserosa. It agrees also with the view of Meyer [4] and others that the infection generally arrives by way of the blood stream. It is not inconsistent, however, with Graham and Peterman's [5] idea that it often comes by way of the lymphatics from foci of disease elsewhere in the abdomen.

PATHOLOGIC REPORTS

Thirty-seven of the more questionable gallbladders were sectioned. More or less marked histologic changes were found in seventeen; a mild cholecystitis was diagnosed in nineteen, and a negative report was returned in one.

Fortunately, in that case a fine result was obtained, as the result probably of the removal of the appendix and two old pus tubes.

The striking thing in these reports is the fact that a gallbladder can remain almost unchanged after forty years of infection and stone formation. Many a time during the earlier stages of this study, if the senior writer had not found stones and had not cured his patients, he would have been inclined, after receiving Dr. Rusk's report, to blame himself for having removed a normal gallbladder. For instance, Mrs. B., aged 44, had suffered from early childhood with attacks of abdominal pain, jaundice and other typical symptoms. Life for years had been almost unbearable. A thin walled, normal appearing gallbladder was removed. It contained five stones, and here and there were a few strawberry-seed markings on the mucosa. The wall contained *Staphylococcus albus*. The after-result was excellent. Dr. Rusk reported: "The epithelium shows no change. In a few areas there is slight hyalinization but no fibrosis of the subepithelial tissue; a few small focal accumulations of lymphocytes and occasional plasma cells are seen. There is no fibrosis or hypertrophy of the muscularis. The serosa is negative." Many other such cases might be cited to show again how hopeless it is to diagnose even the oldest lesions by roentgenographing the gallbladder, by palpating it, or even by looking at it. If the histologist cannot show changes in the organ, the rest of us will have to depend on the history and on the signs in the upper abdomen suggestive of repeated inflammation there.

RESULTS

The mortality was low (1.7 per cent.). Only one woman died as a result of the operation, and she had a complete volvulus of the bowel, made possible by a peculiar mesentery which had a very limited attachment to the spine. One died within a year from carcinoma of the pancreas; another in about a year from a carcinoma of the hepatic flexure which could not be removed at the time of operation for the gallstones. One man died in about a year from a far advanced cirrhosis of the liver, which was recognized before his cholecystectomy was done. He was not an alcoholic, and the cirrhosis was due apparently to forty years of cholecystitis.

Seventeen are perfectly well or remarkably improved; eighteen are much better; eleven report some improvement, and three are apparently no better. We do not know much about the after-history of four, and three have been operated on too recently for us to know how they will do.

It will be seen, then, that forty-six, or 77 per cent., had reason to be more or less grateful for the operation. Twenty-nine of these still have occasional attacks of flatulence or pain and soreness, especially when they are tired and run down, or when they have respiratory infections. A few still have some gastric stasis and perhaps would have been better off if they had had a gastro-enterostomy or a pyloroplasty done in addition to the cholecystectomy. In one very successful case the surgeon did a pyloroplasty, and in another the patient had to have a gastro-enterostomy a few months after the cholecystectomy.

Bacteria Found in Forty-One Gallbladders from Which Cultures Were Taken

	Wall	Bile
Streptococcus salivarius	3	1
Streptococcus viridans	1	.
Streptococcus unidentified	5	1
Staphylococcus albus	4	1
Staphylococcus aureus	2	.
Staphylococcus hemolyticus	2	2
Bacillus coli	5	3
Gram-negative bacillus	2	2
Gram-positive diplococcus	2	.
Diplococcus	1	1
Diphtheroid bacillus	1	1
Growth in	26	12
No growth in	15	29

The wall was infected in 63 per cent.
The bile was infected in 29 per cent.
In eleven calculous cases: The wall was infected in 82 per cent. The bile was infected in 36 per cent.
In thirty acalculous cases: The wall was infected in 57 per cent. The bile was infected in 27 per cent.
In several instances, more than one organism was obtained from a gallbladder.

In judging of the results, it must be remembered that many of these people are past 55, and severely handicapped by hypertension, myocarditis, menopausal disturbances and other things that must interfere with their return to perfect health.

The more neurotic patients, as one would expect, are still neurotic and occasionally suffer from nervous upsets. We have seen nothing that would suggest that the patient is ever handicapped by the loss of his gallbladder.

COMMENT

If, as seems most probable, cholelithiasis represents a terminal stage of cholecystitis, we should encounter many more acalculous than calculous cases, and that is the writer's experience in the study here reported. Just as we now take pride in diagnosing pulmonary tuberculosis before there is any cough or sputum, we must soon take pride in diagnosing cholecystitis before there are stones, jaundice or typical colic.

4. Meyer: J. Infect. Dis. **28**: 456, 1921.
5. Peterman, M. G.: Surg., Gynec. & Obst. **36**: 522 (April) 1923.

Furthermore, we must recognize that gallbladder disease is a very common gastro-intestinal trouble, more important than duodenal ulcer and chronic appendicitis put together. Fortunately, we can already, with the knowledge at our disposal, make the diagnosis with a fair degree of certainty in many early cases. Often it is well to have the patient return at intervals for observation, especially during the more acute stages of the disease, when the physician may be able to settle the few doubts remaining in his mind by finding liver tenderness, fever or an icteric tint.

There is probably no medical treatment which can be counted on to quiet an inflamed gallbladder, either temporarily or permanently. Diets, medicines and Lyon treatments may seem at times to work miracles; but we have seen many, just as marvelous, appear over night before there was time for any medication. Often the only way in which the physician can convince these people of the need for operation is to refuse to treat them medically. It raises their respect to find that he will not accept money for that which he feels will probably be useless; and they are left with no doubts about the strength of his convictions.

Another difficulty about medical cures is that we never can say when the remissions which are so characteristic of the disease have become permanent. One woman in this series went for twenty years without symptoms from her stones, and then developed such severe trouble that she had to be operated on. Another patient with gallstone colic and jaundice went ten years before he had a return of symptoms.

The big question in the treatment of early cholecystitis is: What chance has the patient of clearing up his infection and keeping it clear? We know that large numbers of people with these infections are forced to operation in later life—but how many of them are? How many clear out the gallbladder just as they clear out their antrums and sinuses after an acute nasal cold; and how many are there who will develop the encysted, shriveled up and apparently harmless gallbladders? Until we can answer these questions, we must wait and watch a number of young people with undoubted cholecystitis to see what they can do for themselves, even though we know that they run the dangers of some day developing cirrhosis of the liver, pancreatitis, myocarditis, arthritis, carcinoma, empyema of the gallbladder, and all the serious complications of cholelithiasis. Most of the younger people will refuse operation any way, no matter how hard we urge it on them, because their troubles are still quite bearable.

Throughout much of this paper we have had to emphasize the fact, abundantly demonstrated, that if the patient is to be cured, the surgeon must often remove a normal appearing gallbladder. Not infrequently, as in the case to be described, the quite pardonable reluctance of the operator to do such a thing leads to much more or less unnecessary surgery.

Mrs. D. began at the age of 12 to have spells of nausea, vomiting, dopiness, epigastric pain and severe headache. A diagnosis of appendicitis was made. At the age of 19, the right kidney was fixed and there was a temporary respite. At the age of 24, during a protracted spell of abdominal pain, fever and stupor, an apparently normal appendix was removed at the senior writer's request. The gallbladder was examined and was thought to be normal. Severe and typical gallbladder colic shortly afterward appeared, often prostrating her for days. At the age of 27, she was opened again for a cholecystectomy, but as the surgeon could not bring himself to remove so normal appearing a gallbladder, he took out instead a cystic ovary. A year later she again had to be opened for gallbladder colic, but again only some pelvic work was done. She had such severe colic ten days later that the surgeon went in immediately and this time, as a compromise, drained the gallbladder. Good health was hers at last for the first time since youth, but after three months the attacks began to come back. When the patient was 30, another surgeon removed the gallbladder, and she has since, for two years, enjoyed excellent health.

In another case in this series the gallbladder looked so normal that even with our convictions on the subject, we might have gone back on our diagnosis if the patient, an intelligent young physician, had not given instructions that the organ was to be removed anyway. This gallbladder proved to be heavily infected with two strains of *Streptococcus viridans;* and the improvement in the patient's health has been most gratifying.

Although we must emphasize these things, we cannot help dreading some of the results which may follow from such teaching. We would insist that early cholecystectomies can be done confidently only when the patient has been studied carefully and extensively. No single test or finding should be relied on in making the diagnosis. Finally, to remain within reasonable bounds, the physician must consult daily with the pathologist, and must follow up his cases to see whether his results justify the decisions made at the operating table.

It must be remembered also that many people have some pain, distress or flatulence after technically successful operations. The senior writer has screened a number of these people and has found a good deal of the same gastric and intestinal spasm that was present before the operation. When we remember that the gallbladder disease is but a part of an infection spreading up through the liver, through the bile ducts, down into the pancreas and probably often into the duodenal wall, the surprising thing is not that some remain uncured, but that so many recover so promptly after removal of the gallbladder alone. It would seem that that part of the biliary tract is the least able to clear itself of infection; and, once removed, the rest of the tissues can put themselves in order. Many of the flare-ups in these people occur after or during colds, when, as Meyer has shown, the liver is engaged in its function of culling circulating bacteria out of the blood and excreting them into the bile.

When at times the senior writer wonders if he is losing his mental balance and diagnosing cholecystitis too often, he derives comfort from the fact that in twelve of the cases in this series, the gallbladder disease was discovered, more or less unexpectedly, at operations for pelvic disease, appendicitis or duodenal ulcer. Certainly, there would seem to be little need for drawing back so long as so many cases are still going undiagnosed. Incidentally, these cases illustrate the great need for a thorough exploration of the abdominal cavity when it is open. The clinician should be there to insist on such a study even when his diagnosis of ulcer, appendicitis or pelvic disease has, at the first glance, been fully confirmed. Fourteen of these men and women had had appendectomies, often with a McBurney incision too small to admit the hand for an exploration. To be sure, a number had been explored, but as the work had been done several years ago we cannot blame the surgeon for having passed the gallbladder by as normal.

SUMMARY

Cholecystitis is a disease which begins in youth, and is first recognized and properly treated in middle or old age. The average duration of symptoms in a series of sixty cases in which operation was performed was 19 years. Presumably, then, those who will be operated on in 1942 are just now entering our offices with their first more or less vague symptoms.

At operation, the gallbladders were often found to be thin-walled and normal in appearance; hence, in order to relieve the patient, the organ had to be removed on the strength of a good history, suggestive physical and roentgen-ray findings, and the presence of large glands on the cystic duct, adhesions in this region and patches of perihepatitis.

Remarkably few histologic changes were found in some gallbladders which contained stones and which had given symptoms for forty years.

Living bacteria were obtained from 82 per cent. of the calculous, and from 57 per cent. of the acalculous, gallbladders.

The infection was found most commonly in the wall, and the histologic changes were generally in the muscle and subserosa. The bile was often sterile (71 per cent.), and normal in appearance.

Surgeons who become enthusiastic over the results of early cholecystectomies will have to check up constantly on their work in order to avoid the danger of removing normal gallbladders.

There are difficulties in deciding for or against operation in the early cases. Unfortunately, there is no medical treatment that will deal with the disease which is located, not in the bile, but deep in the wall of the gallbladder.

The results of removal are generally satisfactory, but many patients have to stay on a cellulose-poor diet, and others develop some of their old symptoms when fatigued or when recovering from colds.

ABSTRACT OF DISCUSSION

DR. ROLAND CUMMINGS, Los Angeles: The crux of this subject is "diagnosis." I think we will all agree on the treatment, once we make the diagnosis. Dr. Alvarez has told us how to make a better diagnosis by obtaining a more careful history and by making more careful observations. Unfortunately, the bacteriologic and pathologic study of the gallbladder requires more skill than is within the reach of the average physician. I also think it possible for this paper to do infinite harm. Should the physician permit himself to call the surgeon and have gallbladders removed because the history and physical findings are suggestive of gallbladder disease, he will frequently find that he has become involved in a world of trouble. If, on the other hand, a patient is observed carefully until a diagnosis of gallbladder disease is made beyond a reasonable doubt, surgery will then be the treatment of choice.

DR. WILLIAM CARPENTER MACCARTHY, Rochester, Minn.: I want to compliment Dr. Alvarez on his careful study of cases of cholecystitis. However, I feel that after he has seen more cases and studied the associated pathologic conditions, he will not be quite so emphatic on some points. I was led to believe that diagnosis of cholecystitis was a comparatively easy thing—perhaps I was mistaken in the interpretation of his remarks—but the clinical diagnosing of cholecystitis in its early stage is very difficult, and it might be easily confused with appendicitis, duodenitis or duodenal ulcer, gastric ulcer or hepatitis, or many other things. So far as the gross diagnosis from the operation is concerned, that is also frequently very difficult. In a series of 5,000 gallbladders which I studied several years ago, 1.7 per cent. were perfectly normal. The surgeon not infrequently takes out a gallbladder which looks normal but is not normal, but I think he is to be congratulated on the fact that he does not take out more normal gallbladders. I do not believe in removing gallbladders on a history. As to the statement about chronic poisoning from the gallbladder, I would challenge anybody to prove that any toxic condition comes from a pathologic condition in the gallbladder. I do not say that it does not occur, but I should like to see somebody prove it. I want to emphasize what Dr. Alvarez said about diagnosis from the bile. It is absolutely true that even in a pathologic gallbladder the bile frequently does not show abnormality. We cannot distinguish it from normal bile. In that respect I certainly want to agree with Dr. Alvarez. Bacteria do not always occur in the bile when they are present in the gallbladder wall. Achlorhydria, I was perhaps correctly or incorrectly led to believe, is common in cholecystitis. I want to direct attention to this possibility. I believe that achlorhydria is one of the predisposing factors of cholecystitis rather than a secondary thing. We make a great mistake in studying disease from an organic standpoint. We should study the system. Rarely is the disease confined to one organ. The stomach, liver, duodenum, gallbladder and pancreas must be considered as parts of one system. When one of them is diseased, the chances are that all of them are diseased.

DR. MAX THOREK, Chicago: Many studies have been made on the effect of cholecystectomy on the biliary tract. In complete removals we find an enlargement of the common duct. That is significant in itself, and that compensatory enlargement suggests that the gallbladder has definite physiologic functions. Therefore, the removal of any organ that has a definite and clear-cut physiologic function should never be attempted, unless there is a definite and absolute pathologic condition indicating that the organ should be removed for reasons that give definite subjective and objective clinical manifestations. I understood Dr. Alvarez to say that he had only 3 per cent. of mistakes on his roentgen-ray findngs in the biliary tract. I wish I could say as much of my results. I frequently find a great many reports of absolutely positive shadows in the gallbladder indicating calculus and find at the operation that I am dealing with an ulcer of the duodenum or pylorus. I wish to make a plea for more conservatism in biliary surgery. I believe that cholecystotomy is getting back to its well merited place. It was significant to me in reading Hans Kehr's work that when he was suffering from biliary trouble he went to Carlsbad to cure himself. So, as far as my patients are concerned, I believe in being conservative; and, although mortality statistics show only a slight increase by cholecystectomy, that slight increase is not justified.

DR. SEALE HARRIS, Birmingham, Ala.: Dr. Alvarez brought out a most important point, that the gallbladder is sometimes a focus of infection for other organs. Sometime ago I had a case that brought out this fact quite strikingly. A man came to me with definite symptoms of gallstones. He had arterial hypertension, a systolic pressure of 180, and considerable albumin with casts in his urine. He had been advised that he should not be operated on on account of the kidney condition. I insisted that an operation be performed. The gallstones and gallbladder were removed. The urine cleared up, and the tension was lowered considerably. In this case, the gallbladder was the source of infection for the kidneys. I am of the opinion that the source of infection in gallbladder disease begins in many cases in infancy from ileocolitis, and then from gastro-intestinal disturbances in later years from an improper diet. I think that the same physiologic factors that are present in gallbladder infection are also present in the pancreatitis preceding diabetes. In the treatment of gallbladder disease, in the precalculus stage, the diet is of great importance, and, if carried out properly, the gallbladder infection will subside. I do not think that in the early years of infection the gallbladder should be removed. Among the etiologic factors of gallbladder disease is the present-day diet of white bread, polished rice, lean meats and the excessive use of sugar, a diet containing too much carbohydrates and fats and protein, and too little of vitamins and mineral substances. An improper diet will pre-

pare the way for intestinal infection, and this infection is carried from the intestine into the gallbladder. By giving the proper diet in early years of gallbladder infection I believe the disease will subside without the formation of stones and without operation.

DR. A. J. OCHSNER, Chicago: My personal experience in gallstone surgery reaches back to a time when practically none of these cases came to our hospitals with a diagnosis of gallstones; almost all of them had a diagnosis of intestinal or gastric disturbance, and very few of them, if any, had a diagnosis of gallstones. In Chicago, we drank contaminated water until about twenty-five years ago, and quite a large proportion of the adult population had typhoid at some time. In the last twenty-five years, typhoid infection has been decreased enormously, until at present we have practically no cases in Chicago. Twenty-five years ago, I would have gallstone cases referred to me by other gallstone patients very much more often than by other physicians, because the patient who had gallstones before would know that a friend who had the same symptoms had gallstones.

DR. F. B. TAYLOR, San Francisco: Dr. Alvarez had to leave, and he gave a few notes to me that may answer some questions. Dr. Alvarez did not mean to infer that the diagnosis of gallbladder disease was easy in any sense of the word. He favors the most complete sort of examination, and the use of every possible means for diagnosis that can be made, and the recognition as early as possible of the sorts of gallbladders that are apt to keep progressing and to require operation later on. To show that he is not particularly overweening in his views about the diagnosis of gallbladder disease, twelve patients recently were subjected to laparotomy for abdominal disease. Gallbladder trouble was not suspected. In six of these cases, disease of the gallbladder was found. He does not subscribe to that sort of teaching which is apt to lead to ruthless or unjustified removal of the gallbladder. I can say this, too: That for many months and years he has observed cholecystitis in patients before he will permit operation, even if the patients are rather anxious for it. But when, for example, a patient has been treated medically for years without success and is then definitely relieved by removal of the gallbladder, it becomes important to save those years of discomfort for the next patient, if possible.

THERAPEUTIC VALUE OF TRANSUTERINE GAS INFLATION *

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The injection of carbon dioxid gas under pressure through the uterus to determine the patency of the fallopian tubes has been employed rather extensively in the gynecologic clinic of the University of Michigan for the last three years. During this period the Rubin test, with some modifications, has been used, since it was thought to be the best method of controlling the flow of gas, regulating its pressure and estimating the amount of gas passed through the uterus and fallopian tubes into the peritoneal cavity.

Not only was the Rubin technic employed to determine the patency of the tubes, but it was the method of choice for the introduction of sufficient gas into the peritoneal cavity to allow the taking of satisfactory roentgenograms whereby pathologic changes in the pelvis could be carefully studied. If, under suitable pressure and after repeated attempts, the gas failed to pass by the transuterine route, usually films for study and diagnosis were obtained after pneumoperitoneum had been produced by the transperitoneal method.

A number of patients examined for sterility by the Rubin test in whom the gas had been forced through the tubes reported that pregnancy had followed without change of other conditions present during the time they had been desirous of children. This led us to send follow-up letters to all women in whom gas had been successfully forced through the tubes, omitting, naturally, those cases in which our investigations had shown that the husbands were the cause of the sterility.

TABLE 1.—*Pregnancies in Thirteen Cases*

Relative Sterility (Four)		Absolute Sterility (Nine)	
Years Since Last Conception	Number of Cases	Years Since Marriage	Number of Cases
5	1	1	1
6	1	2	2
7	1	2½	2
8	1	3	1
		4	2
		7	1

Answers were received from thirty-six of the forty-seven women written to. All of these women were married and desirous of children; in fact, the chief complaint on applying to the clinic was that they were unable to bear children at that particular time.

Thirty of these women had never been pregnant and were therefore considered absolutely or primarily sterile. The remaining six had conceived some time earlier in their married lives and were therefore relatively or secondarily sterile. Three had given birth to full-term children, while the other three had aborted when either two or three months pregnant.

At varying intervals following the Rubin test, thirteen, or slightly more than one third of these thirty-six women, became pregnant. Conception occurred in four who had previously conceived in their early marital lives. Two had had abortions, while the other two were delivered of full-term infants. The remaining nine had never conceived. Since four of the six women who were relatively sterile became pregnant after the passage of gas through the tubes, while only nine of the thirty who were absolutely sterile conceived after the gas inflation, it follows that something more than the mere passage of the gas and the mechanical opening of the tubes must be considered in trying to ascertain the reason for the relatively higher percentage of pregnancies in those women who had previously conceived.

The pregnancies in ten of these women went to full term, while three resulted in spontaneous abortion at the third month. One of these abortions occurred in a patient who had been relatively sterile for seven years.

One of the questions found necessary to consider was the length of time after marriage in the primarily sterile women, and the interval since the last pregnancy in the secondarily sterile women, before they consulted us for the relief of their barrenness. The twenty-three who did not become pregnant had not conceived for from one to eighteen years. Four had been sterile from one to two years, while twenty had not brought forth offspring from three to eighteen years. The largest number, six, had been living a normal sexual life for three years without conception. It is interesting to note that of the thirteen women who became pregnant after the gas inflation, five successfully conceived during the first or second years of marriage.

* From the Department of Obstetrics and Gynecology, University of Michigan Medical School.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

The other eight had not been fruitful from three to eight years before reporting to the clinic. This is well illustrated by Table 1.

It is generally accepted that the most fruitful period is the first five years of marital life. Thus, we see that, after the passage of the gas, more than one half of these women conceived during a similar period.

Naturally, sterility groups must be studied as to the age at which the individual women apply for diagnosis and treatment, since after a certain age conception is less likely to occur. Under any form of treatment, the chances of conception in women of 40 would be much less than in women of 25.

The same treatment, transuterine gas inflation, was applied in the thirty-six cases. The ages of the group in which conception occurred varied from 21 to 38 years, an average of 26 11/12 years. The average of the twenty-four women who did not become pregnant after the passage of the gas was 29¾ years, the ages varying from 20 to 40 years. Hence we may conclude that, of a given group of sterile women in whom gas is forced through the tubes, the younger the woman the greater will be her chance of conceiving.

We realize that a certain proportion of the women subjected to the gas test might have conceived had such a test not been made; for a woman exposed to pregnancy for one or two years is not necessarily sterile if conception does not take place during these periods. We are setting forth the facts as we found them in a given number of women who came to the clinic complaining of sterility. Pregnancy followed the routine investigation of the cause of the complaint for which they sought relief. Certainly, past experience would not lead us to expect that any such number of pregnancies would have followed mere bimanual examination and advice to report at a later date. All but three of this group of thirteen became pregnant within six months after the inflation. Five had only one normal menstrual period, and then in due time gave birth to infants. In general, we can say that the shorter the period of sterility the more

TABLE 2.—*Arrangement According to Time of Conception*

Duration of Sterility	Time of Conception Following Inflation
1 year	1 month
1½ years	1 month
3 years	1 month
4 years	1 month
5 years	1 month
7 years	2 months
1½ years	3 months
2 years	4 months
2 years	5 months
1 year	6 months
4 years	10 months
7 years	1 year
8 years	1⅓ years

quickly pregnancy supervened. This is shown by Table 2.

It should be added that none of the patients becoming pregnant were operated on after the inflation, no treatment was instituted, and no advice was given other than to wait for developments.

On investigating the possible cause for the barrenness in both the pregnant and nonpregnant women, we discovered that, proportionate to the number in each group, there were more women with normal generative organs in the group who became pregnant. The preponderant lesion in both groups was a unilateral or bilateral salpingo-oophoritis. This can best be illustrated by Table 3.

In both the group of women who became pregnant following the gas inflation and in those who were not so fortunate, there were pelvic lesions which are commonly supposed to be factors in preventing conception. However, the fact that, without any treatment, certain women with such pelvic lesions conceived after examination by gas inflation would lead to the consideration of the possibility of the mere passage of the gas through the tube or tubes being a factor in the results.

As has been mentioned, the Rubin apparatus and technic, with certain modifications set forth elsewhere, have been used from the very beginning in the clinic.

TABLE 3.—*Abnormalities*

Pregnancy Cases		Nonpregnancy Cases	
Salpingo-oophoritis, bilateral or unilateral	5	Salpingo-oophoritis, bilateral or unilateral	8
Normal pelvis	3	Normal pelvis	5
Normal pelvis except for erosion and endocervicitis	2	Normal pelvis except for erosion and endocervicitis	4
Normal pelvis except for bilateral laceration	1	Salpingo-oophoritis with diseased cervix	3
Normal pelvis except for excessive and markedly acid vaginal and cervical secretion	1	Acute anteflexion	1
Complete retrodisplacement with relaxed outlet and bilateral laceration	1	Infantile uterus	1
		Complete retrodisplacement	1
Total	13	Total	23

Carbon dioxid gas under pressure, with its outflow regulated by reducing and needle valves, has been employed in all of the sterility cases used in this report. It has been found by experience that the rate of flow of gas through the inverted siphon flow meter must not exceed four pulsations a minute, and that it is better to begin the inflation with the rate of two pulsations a minute. This is because the permeability of the tubes to the gas is judged by manometer readings when more than two pulsations a minute are employed; that is, when the apparatus is so set that more than 60 c.c. of gas is being forced under pressure through the cannula each minute, the manometer reading may rise rapidly to 200 mm. of mercury, the danger point. When the connection is broken, the gas ceases to flow and the manometer reading returns to zero. It is judged that the tubes are closed when, in reality, there is another explanation. The sudden rise of the manometer is due to a volume of gas being forced into the uterine cavity more rapidly than the lumina of the tubes can care for it, and as a result the back pressure registered on the manometer is in excess of what it actually is in the tubes. Therefore, it is most important that an apparatus such as that designed by Rubin be utilized for regulating and measuring the amount of gas escaping from the carbon dioxid tank. It is interesting to note that one of our earliest sterility patients, who afterward became pregnant, was thought to have nonpatent tubes because, with four pulsations a minute, the spring manometer registered a pressure of 200 mm. of mercury during repeated attempts to pass the gas. Accordingly, the use of the hand syringe, such as the ear-bulb and Luer syringe, is unsatisfactory, since, with both, the amount and rate of flow cannot be accurately judged. It has also been our experience that the spring manometer is not as accurate and, on the whole, not as satisfactory as the mercury instrument.

Recently, various writers have advocated the substitution of oxygen or air for carbon dioxid. During our experimental days with pneumoperitoneum of the pelvic cavity, both were used in the clinic but were

early abandoned, and carbon dioxid alone has now been in use for two and one-half years.

The criteria on which the patency of the tubes is based are four: (1) a manometer reading below 200 mm. of mercury; (2) the sound of the gas passing through the tubes, detected by auscultation over the symphysis; (3) pain in the upper abdomen when the patient is in the sitting posture, and (4) roentgenography or fluoroscopy.

During the transuterine inflation, patients occasionally complain of more or less distress in the lower abdomen. This is especially true of those women with chronic inflammation about the appendages. It has commonly been our observation that the discomfort or pain is in proportion to the amount of pelvic inflammation. The more serious and extensive the lesion, the more distressing is the introduction of the gas. As yet, it has not been possible to associate the location or type of pain with any particular kind of pathologic change.

There is still another type of pain after gas inflation, when the patient is placed in the sitting or Fowler's position, which is pathognomonic of the patency of the tubes. It is the result of the establishment of a subphrenic pneumoperitoneum and is located most commonly in the right shoulder, occasionally in the left and frequently in both shoulders as well as the upper abdomen. In character, it resembles the pain caused by the passage of gallstones, but disappears as soon as the patient resumes the recumbent position. In arriving at a diagnosis of the patency or nonpatency of the tubes, this symptom is always sought for.

It has not been necessary to use the fluoroscope to determine the presence of gas in the pelvic cavity. We do, however, take stereoscopic roentgenographic films of the pelvic organs whenever there is a doubt about their condition. Roentgenograms were made of the uterus, tubes and ovaries in nine of the pregnancy and fifteen of the nonpregnancy cases, the gas being introduced through the tubes. This was merely an added proof that the oviducts were permeable, besides furnishing us with a picture of the pelvic organs.

The question is often asked, What will happen if, by mistake, a transuterine inflation is done in the presence of a normal intra-uterine pregnancy? Will the inflation terminate the pregnancy? In two women from six to eight weeks' pregnant, as a result of mistaken diagnosis, the Rubin test was carried out. In neither of them was there any bleeding or uterine contractions following the passage of the gas. Both were eventually delivered of normal, full-term children. The gas was undoubtedly forced around the decidua and out through the tube or tubes without damaging the uterine contents seriously enough to bring on an abortion. Other observers have had a similar experience.

In order to determine the way the gas passed through the tubes, the latter were observed in quite a few patients through the median laparotomy incision, after the flow of gas was started through the uterus with the ordinary transuterine technic. It may be well to state that all this work was carried out under the strictest asepsis. The field of operation was prepared with 5 per cent. picric acid. When the experiment was combined with an abdominal section, the wound edges were well protected by gauze, and the intestines as well as the other abdominal organs carefully packed off. No inflation was done in the presence of a purulent vaginal or uterine discharge, and never when there was any suspicion of an acute inflammation of the pelvic organs. In other words, every precaution was taken not to allow our scientific zeal to increase the chances of sepsis for our patients.

With the Keyes-Ultzmann cannula in the cervix and the abdomen open, the gas test was done on both obstructed and unobstructed tubes according to the prescribed technic. That gas was issuing from the tubes was determined by filling the posterior culdesac with physiologic sodium chlorid solution and then watching for bubbles to appear at the fimbriated extremities. It was found that in unobstructed tubes a bubble or bubbles arose during the first attempt, usually at a low pressure. In the case of obstructed tubes, the findings were quite different. In these, the gas, depending on the type and location of the obstruction, either did not pass at all or only at a high pressure, and frequently only after repeated attempts.

The fallopian tubes may be divided for the present purposes into two portions: the isthmus or narrow portion of the tube, which begins just outside the uterus and runs through that organ, and the larger portion or ampulla, which ends with the ostium abdominale surrounded by the fimbriae. Under normal conditions, it is extremely difficult to pass the finest bougie or straw bristle through the isthmic portion of the tube into the uterus. The same difficulty is noted when the Curtis method of determining the patency of the tube is employed. When air is injected with a Luer syringe through the infundibulum, the tube distends down to the beginning of the isthmic portion. A hasty conclusion might be reached that the tube at this point is impermeable; but that such is not the case is shown by the passage of the gas through the isthmic portion when the distended ampullar portion of the tube is milked toward the uterus. With the abdomen open, one is in a position to judge whether gas passes through the tubes or not, since a single bubble of gas issuing from either fimbriated extremity is easily detected.

Under low pressure, when the gas was introduced slowly through uteri and tubes without an inflammatory history, it was our experience to find that the gas passed readily, as demonstrated by the continuous stream of bubbles issuing through each fimbriated extremity. The manometer readings when the gas passed under these circumstances were low, usually not going above 80 mm. of mercury.

When there was a distinct history of uterine and tubal inflammation, even though the tubes were not closed at their extremities or macroscopically enlarged, a number of cases were observed through the abdominal incision in which the pressure had to be raised to 200 mm. or over before the resistance at the isthmic portion of the tube could be overcome. That the obstruction to the flow of gas must have been at this portion of the tube is shown by the fact that the fimbriated extremity was open and allowed the passage of an ordinary surgical probe down to the beginning of the isthmic portion of the tube. To ordinary pressures, namely, from 150 to 200 mm. of mercury, these tubes were impermeable to gases. When, however, the pressure was reasonably elevated, the apparent obstruction was overcome and the gas appeared at one or the other fimbriated extremity.

This apparent closure may be due to various conditions present in that portion of the tube. It may be the result of an accumulation of mucus resulting in a plugging of the lumen of the tube; but this can hardly be the case, since no such plug has ever been seen during the microscopic examination of thousands

of tubes. Kinking of the tube at this point has been suggested as a possible cause of the lack of patency to the carbon dioxid; but, since the tube is practically straight in this region, it cannot be considered a satisfactory explanation.

In the ampullar portion of the tube, the tortuosity of the oviduct may possibly prevent the ready passage of the gas. Hypertrophy of the mucosa, with polyp formation acting as a ball valve, has been suggested as the reason for the gas passing through the same tube at varying pressures. This is a comparatively rare finding in microscopic preparations but is within the range of possibility. The most logical explanation of isthmic obstruction is that it is the result of chronic infection. The infection causes an inflammation of the submucosa and muscularis resulting in fibrous tissue proliferation, with a resultant narrowing of the lumen of the tube. This has actually been observed in serial sections of microscopic preparations. The narrowing at times is so marked that the lumen is reduced from one-fifth to one-twentieth its normal size. The lumen of the tube is narrowed by atrophic changes due to the menopause. Such atrophic tubes are quite analogous, so far as the passage of gas is concerned, to tubes whose lumina are narrowed by inflammatory changes.

This was strikingly shown in one experiment on a rather large uterus which had to be removed vaginally from a woman past the menopause, for the cure of an extensive prolapse. A probe was passed without difficulty down to the isthmic portion of the tubes, demonstrating that there existed in the ampullar portion of the tubes no obstruction to the passage of the gas. The latter could not be forced through the tubes at the ordinary pressure, 200 mm. of mercury. Bubbles of gas did appear at one fimbriated extremity, however, when the pressure was raised to 300 mm. of mercury. Microscopic examination of the isthmic portions of the tubes showed the usual narrowing of the lumina but no closure of any portion, although serial sections were made.

In fact, it may be stated that neither Drs. Warthin nor Weller of the University of Michigan Pathological Laboratory has ever seen, in many thousands of tubal microscopic sections, a complete closure of a tube except at the fimbriated extremity when the atresia is due to a different mechanism.

Since we have failed to demonstrate closure of the isthmic portion of the tubes, it would be better to refer to impermeability in these regions as an obstruction rather than an atresia. The difficulty, of course, lies in our inability with present procedures to determine, by the manometer readings, whether we are dealing with an obstruction due to narrowing of the isthmic portion of the tube due to inflammation or to some other cause, or whether the gas fails to pass on account of closed fimbriated extremities.

Probably the most common cause of complete tubal obstruction arises from occlusion of the fimbriated extremities of the tubes, the result of inflammation, usually of gonorrheal origin. These sealed, club-shaped ends of the tubes absolutely prevent the ova from finding their way to the uterine cavity, although the lumen of the tube may not be so obstructed as to bar the upward passage of the spermatozoa.

In a certain proportion of cases, the ostium abdominale of the infundibulum is not closed by the inflammatory process, but is shut off by adhesions surrounding the structures. It has been our good fortune in some of our experiments, when the gas pressure was raised to 200 mm. of mercury or above this point, to observe the process whereby the tubes became once more patent. The gas is expelled either by a separation of the adhesions or by rupture of the infundibulum. It is interesting to note that this does not always occur during the first attempt, but only after repeated elevations to a maximum pressure, and occasionally at a pressure lower than the maximum used in the particular case. When rupture occurs, it takes place at the weakest point in the tube. That point we have found to be about 1 cm. from the closed fimbriae. The opening is small, but enlarges with the continual escape of gas. In more than one case, gas escaped through one or both fimbriated extremities when adhesions were released and the tubes lifted to a higher level.

We are willing to advance the premise that in many cases the narrowed lumen of the isthmus is occasionally dilated sufficiently in obstructed oviducts to permit the upward progress of the spermatozoa; and in other tubes we feel that occasionally the fimbriae of mildly adherent tubes are separated or new openings established so that ova may gain access to an otherwise closed ampulla. With that possibility in view, would it not be advisable, when necessary, to raise the pressure in the uterus and tubes higher than our previously accepted danger point of 200 mm. of mercury?

The only possible danger to the patient from the use of gas inflation is the introduction into the peritoneal cavity of infected blood or septic material from the uterus or tubes. This can actually occur, since we have seen blood which had collected in the uterine cavity following a curettage or injury to the endometrium forced through the tubes at pressures ranging from 60 to 200 mm. of mercury. If, however, the indications and contraindications for this method of diagnosis and therapy as laid down in previous communications are observed, no such complications will arise. The fear that gas may be forced through the tubal wall into the vessels of the broad ligament would seem unfounded, as shown by clinical experience and by our experiments. While we have never used gas pressure above 250 mm. in our tests, the pressure has been raised to 300 mm. of mercury with the abdomen open. In every instance the rupture occurred, not into the broad ligament, but through the thinner infundibular wall. When rupture of the tube does follow the forcing of the gas through the tubes, we have never observed any appreciable hemorrhage as a result. Either adhesions separate, or rupture occurs in the most avascular area.

Roentgenograms of the pelvic organs have occasionally shown the uterus distended with gas. The uteri in these cases were somewhat atonic, and so in the presence of a spastic internal os it has been possible to introduce from 10 to 20 c.c. without forcing the gas through the oviducts. Also, we have seen the gas introduced at the time of the inflation remain in the uterus and be expelled in moderate amounts through a resected uterine cornu. In view of these findings and others, we feel that we have proved both clinically and experimentally that it is most essential to use for diagnosis and treatment of tubal sterility an apparatus that will accurately measure the amount and register the pressure at which gas is being forced through the uterus and tubes, and that an ear-bulb or Luer syringe is less efficient than the apparatus designed by Rubin.

We desire to mention results obtained in a comparatively small group of women who complained of

painful menstruation in addition to their sterility. Twenty-four such women answered questionnaires relative to their relief from this symptom following gas inflation. Of these, twelve were immediately improved or cured and have remained so since the inflation. In eight, the relief has been permanent, after from eight to eighteen months. Three women reported that their periods were even more painful after the inflation, but it is interesting to note that two of the latter became pregnant.

No explanation is offered as to why these patients were relieved. Possibly it is due to a stretching of the uterine cavity; but this is hardly probable, since the relief is of much longer duration than is secured by the usual method of uterine dilation. In those women with adhesions about the appendages, the benefit derived from the inflation may follow a stretching of the adhesions. This, however, does not explain the method of relief in those women with apparently normal pelvic organs. It has been suggested that a tubal dilation occurs and that the enlarged lumen permits the expulsion of the increased tubal secretions incident to menstruation. Perhaps further observation may furnish the clue to the correct explanation.

The cases of relief from dysmenorrhea have been too few to warrant the drawing of any conclusions; but the relief has been so marked following the gas inflation that we are using it deliberately for the relief of this symptom alone. From hundreds of cases of transuterine gas inflation we are convinced that the method is without danger, if certain precautions are taken in the selection of cases. It is a far simpler procedure than uterine dilation or the insertion of a uterine stem. In fact, we are using it constantly in the office as well as in the clinic, and hope to report our results at a later date.

ABSTRACT OF DISCUSSION

DR. J. W. SHERRICK, Oakland, Calif.: I have utilized the Rubin technic of transuterine inflation to determine the patency of the fallopian tubes in several hundred cases, partly as a means of diagnosing the condition of the tubes in sterility cases and partly to aid in the diagnosis of questionable pathologic changes in the pelvis. I have been enthusiastic about this procedure as a therapeutic measure in overcoming mild obstruction of the tubes in sterile women; but, contrary to expectations the results have not been nearly so striking as those reported by the authors. My associate, Dr. Loomis, has recently analyzed 150 consecutive cases of sterilty, but in only two cases which proved treatable, and the women became pregnant, could we feel reasonably certain that conception occurred as a direct result of the passing of carbon dioxid gas through the tubes. The high percentage of successes in the series presented is very gratifying, and would lead one to the opinion that this method is either much more useful as a therapeutic measure than has seemed the case in our series, or else the authors have been unusually fortunate. I feel certain that if they could have followed up all their cases and could have instituted necessary procedures to correct other pathologic conditions present, their percentage of fertility would have been materially raised. In our series, of the women who were adequately treated, 52 per cent. have become pregnant, but in these cases every resource of treatment was utilized. It would seem that, as a therapeutic measure, this procedure offers a higher percentage of results in the relatively sterile cases, as shown by the four positive results out of six cases so treated. The time interval at which our patients became pregnant after treatment averages four and nine-tenths months, which corresponds closely with the series just shown. Likewise the age limits of our patients is practically the same, being about 28 and 29 years. A study of the pathology shows that many of these lesions are treatable and offer a favorable prognosis for a successful pregnancy. In our series there were fifteen women with salpingo-oophoritis. In five a successful inflation was accomplished, but none of these women became pregnant; three could not be inflated successfully, owing to the extent of the pathologic changes, and two became pregnant as a result of abdominal section. The eroded and infected cervix, the acutely anteflexed uterus with its concomitant thick tenacious cervical mucous plug, and the retrodisplacement are all amenable to treatment with a fair prognosis of success in a certain percentage. The explanation offered as to the failure of gas to pass seems absolutely correct; namely, closure of the fimbriated extremity or an inflammatory lesion with fibrosis of the uterine wall about the interstitial portion of the tube.

DR. ROLAND S. CRON, Ann Arbor, Mich.: I was greatly interested in Dr. Sherrick's data in regard to the other treatment that might be used in addition to transuterine gas inflation. The point we wished to bring out was the value of this method of treatment or diagnosis. None of these women were treated for their sterility. They came to the clinic for diagnosis, and in the course of the examination, transuterine gas inflation was used. It is interesting that nothing more was done than the method of diagnosis, and that pregnancy supervened; in other words, it seemed to us distinct proof that the gas inflation was the factor that brought about the later conception.

RETRODISPLACEMENT OF THE UTERUS FOLLOWING CHILDBIRTH

A STUDY OF THE DEVELOPMENT OF ITS SYMPTOMS *

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A year ago, Stacy [1] reported the finding of congenital uterine retropositions without other pelvic disorders in 20.2 per cent. of 1,000 virgin adult women. About the same time, I [2] reported retrodisplacement during the year after labor in 41.4 per cent. of 1,230 women. The two series were studied together with normal controls. For purposes of discussion, I may state that uterine retrodisplacement results from some trauma of labor in more than 20 per cent. of cases, since some, at least, of the congenital cases are likely to be sterile.

Aside from a larger proportion of menstrual disturbances than that seen in the normal controls, there were no symptoms in Stacy's series. Pelvic symptoms apparently intimately related to the displacement brought 20 per cent. of my series back to the clinic.

Hoping to come closer to facts, I have continued the study, and now present data obtained from a series of 459 displacements after parturition. All displacements were of the second or third degree. I have classed as pelvic symptoms bearing down sensations, or a feeling of pressure in the pelvis, sacral backache not dependent on sacro-iliac luxations, marked dysmenorrhea, and the metrorrhagias and menorrhagias, and urinary disturbances which disappeared immediately following the correction of the displacement. The cases were followed from six weeks after the patient's discharge from the hospital to various periods up to seven and one half years. One fourth the number, or 115 cases, have been followed three or more years.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Stacy, L. J.: Anteposition and Retroposition of the Uterus: Incidence and Symptoms, J. A. M. A. **79**:793 (Sept. 2) 1922.
2. Lynch, F. W.: Retroversions of the Uterus Following Delivery, Am. J. Obst. & Gynec. **4**:362 (Oct.) 1922.

SYMPTOMS IN FOUR HUNDRED AND FIFTY-NINE RETRODISPLACEMENTS

Much to my surprise I found that more than one half (236 cases, or 51.3 per cent.) of the 459 cases presented pelvic symptoms at some period during the follow up. This contrasts with the former series of 505 cases, 32 per cent. of which presented pelvic symptoms when the patients first returned to the clinic after labor. The control cases presented 10.3 per cent. symptoms. The marked difference between the two percentages suggested other points for investigation. I found that in approximately two thirds (68 per cent.) of the whole series, the only apparent pathologic change was the retrodisplacement, while in the remaining third (32 per cent.), there was, in addition, some type of vaginal relaxation, such as some combination of cystocele, rectocele and cervical lacerations, or prolapsed and enlarged ovaries. I shall term the two divisions "retrodisplacements only" and "retrodisplacements plus." Forty-two per cent. of the 310 retrodisplacements only cases presented symptoms at some time in their follow up. In the 149 cases of retrodisplacements plus, the symptoms reached the high point of 71.5 per cent. This difference at least shows that one who would investigate the meaning of retrodisplacements must study only uncomplicated cases, since the associated pathologic conditions in parous women account for many symptoms and are responsible for a considerable number of operations. Thus, 11.5 per cent. (fifteen cases) of the 130 retrodisplacements only with symptoms came to operation, while 22.1 per cent. (thirty-three cases) of the retrodisplacements plus with symptoms were treated in the same manner.

TABLE 1.—*Follow Up of Four Hundred and Fifty-Nine Retrodisplacements*

Years	Number of Cases
Less than 1	178
From 1 to 2	100
2 to 3	66
3 to 4	38
4 to 5	24
5 to 6	22
6 to 7	20
7 to 7½	11

ONE HUNDRED AND THIRTY RETRODISPLACEMENTS ONLY WITH SYMPTOMS

It seems logical to limit our study to the group of retrodisplacements only with symptoms, if we would know the sequelae of retroflexions and versions after delivery. Little can be learned by a study of retrodisplacements only without symptoms, since the cases of this group do not long remain under observation. I have followed the 130 retrodisplacements only with symptoms to show the time of the development of the symptoms.

Admitting that the 60 per cent. of symptoms during the first four months are due chiefly to subinvolution, there still remain many cases for careful consideration. Thirty-nine of the women of this series had other pregnancies which were the basis for some of the late symptoms. In the great majority of the remainder, the symptoms seemed intimately associated with the displacement.

Of the 130 retrodisplacements only with symptoms, 100 were followed for from one to more than seven years. Seventy-four of the 130 had been cured by means of a pessary. There were forty-six in whom treatment with a pessary had failed. Fifteen of the latter were lost to view after from two to four years of intermittent treatment. The remaining thirty-one include fifteen cases in which operation was performed, and sixteen others that are still under observation.

The degree and character of the symptoms in the cases in which treatment with a pessary failed merit discussion. Quite naturally, the symptoms were fairly slight in most of the women who abandoned the treatment. There were three of the fifteen patients, however, who had rather compelling symptoms and who were offered but refused operation. One of these was known to have a congenital displacement without symptoms until after labor. Her mother and her married, but nulliparous, sister also had retroflexions.

The sixteen remaining patients who were not cured by a pessary are still under observation. Four patients have only slight symptoms. Eight have symptoms which are gradually increasing. Four have considerable complaint and are planning for operation. It is worthy of comment that we have had under observation for more than three and a half years eleven of the twelve patients with marked symptoms, or with symptoms that are gradually increasing, in all of whom symptoms were late in developing.

During the treatment of the 130 cases of retropositions only with symptoms, I made several observations worthy of discussion. Chief of these was the fact that the symptoms which had been relieved when the uterus was in place tended to recur with the return of the third degree of retroposition. In thirty-four cases, the symptoms returned after the removal of the pessary and the recurrence of the malposition. The symptoms came back within a week or two in twenty-two cases, within the second month in five cases, and during the third month in seven cases, usually after straining or lifting. The seven cases up to that time had been regarded as having been cured by the pessary. We should carefully distinguish between this group and the series in which the uterus prolapses over the pessary, since symptoms in the latter series may develop purely from the pressure of the pessary.

TABLE 2.—*Development of Symptoms in One Hundred and Thirty Retrodisplacements Following Parturition*

	Number of Cases	Per Cent.
From 6 to 8 weeks	35	60
8 to 12 weeks	30	
12 to 16 weeks	13	
4 to 5 months	8	16
5 to 6 months	6	
6 to 7 months	7	
7 to 8 months	4	9.3
8 to 9 months	4	
9 to 10 months	4	
10 to 11 months	4	6
11 to 12 months	4	
1 to 2 years	4	*8.5
2 to 3 years	2	
3 to 4 years	2	
4 to 5 years	2	
5 and more years	1	

During the review of the series of 459 cases, I have found a considerable group in which the uterus is sometimes anteposed but more often is in retroposition (hypermobile uteri). When retroposed for a long period, they frequently present symptoms which disappear when the uterus is put in a forward position. These cases probably constitute the simplest type of

retroposition. They must result from a very slight fascial injury to the uterine parametrial supports during labor, just enough to permit an appreciable sagging. A displacement occurs during greatly increased abdominal tension. The uterus in those cases has not yet lost its power to return to the upright position.

CONGENITAL RETROPOSITIONS

Much interest centers in the behavior of the congenital retropositions which Polak [3] and Stacy have shown to be present in 20 per cent. of unmarried normal women. Most of them are recognized by their behavior when a pessary has been applied. It is usually difficult to bring this type of uterus forward and hold it in anteposition. Gas anesthesia is often necessary. Moreover, the malpositions usually recur promptly. My assistants recognize the group by the shape of the cervix and uterus, and the shortness of the posterior fornix, and scoff at the chances of an anatomic cure by use of the pessary. I myself feel that at least three fourths of all the congenital retropositions fall after labor into the group of retrodisplacements without symptoms. A smaller proportion suffer, during labor, fascial injury to the fascial structures of the parametrium. Some of these may later progress into the group of retropositions only presenting symptoms. I have had several of this type of cases.

PREGNANCIES

There were 128 of the 459 retroposition cases in which the patients had one or more subsequent pregnancies. Sixty-one per cent. of these (seventy-eight cases) were among the 236 cases of the group with symptoms, and only 39 per cent. (fifty cases) in the nearly equally large group (223 cases) that presented no symptoms. Pregnancy occurred in eighty cases while the uterus was known to be in the forward position, and in twenty-seven cases while it was retroposed. The uterine position was not known at the time of pregnancy, but had usually been posterior in the other twenty-one cases. There were seventy-nine woman who subsequently became pregnant among the 310 in the group with retropositions only. Thirty-nine of these were noted in the 130 retrodisplacements with symptoms, and only forty in the larger group of 180 retrodisplacements without symptoms. These points suggest a lessened degree of fertility in the retropositions without symptoms and in the persistent retropositions. I feel that this may be due to the large number of congenital retropositions in these two classifications.

CAUSE OF SYMPTOMS

While there was usually no readily demonstrable pathologic change other than the retroposition to account for the symptoms in the group of retropositions only with symptoms, I found definite changes in the pelves of 100 patients who came to operation for uterine posterior displacement. All the multiparas, with one exception, had enlarged uteri; all, with one exception, had marked varicosities of the broad ligaments, and nearly all had cystic or prolapsed ovaries. There were twenty-six nulliparas in the series who had retroposed uteri without pelvic inflammation. The pelvis was normal, except for the retroposition, in four cases, the symptoms being due to an appendix condition. In all of the others, the uterine cavity admitted a sound for more than 3 inches, and there were varicosities in the broad ligaments, prolapsed and grossly altered ovaries, or several of these factors in combination.

3. Polak, J. O.: Acquired Retrodisplacements of Uterus, New York M. J. 111:89 (Jan. 17) 1920.

CONCLUSIONS

1. Retroposition following labor may be merely a persistence of a congenital position.
2. In at least an equally large percentage of cases, it is a sequel to an anterior uterine position, and results probably from some injury to the fascia in the cardinal ligaments of the parametrium.
3. There may result, as a consequence of such injury, persistent and definite symptoms.
4. The symptoms may develop as late as several years after labor.
5. There is a closely allied pathologic condition which probably accounts for the symptoms.
6. Pregnancy is more common in the group of acquired retroposition.

ABSTRACT OF DISCUSSION

DR. HIRAM N. VINEBERG, New York: The value of this paper consists in drawing attention to the fact that these retrodisplacements occur much later after delivery than we have been heretofore led to believe. We have all thought that when the patient was examined six weeks, or twelve weeks at the latest, after delivery and no displacement was found, she could be discharged. Dr. Lynch has shown us that in a great many of these cases the retrodisplacement may occur three, four or six months and even a year later. The great value of recognizing these cases early is, as Dr. Lynch has shown, that pessaries alone will cure 70 per cent. The reason that a great many of these patients go for a long time without consulting a physician, and coming only at a time when pessary treatment is no longer of avail, is the fact that the displacement does not cause symptoms until there is congestion and hyperemia and chronic metritis. That is an unfortunate condition when it occurs, for operation then will not always relieve the patient from her symptoms because a great many symptoms are chiefly due to the enlarged and fibrotic uterus. I was a little bit surprised to hear that there were so many cases of pregnancy occurring in congenital retrodisplacement, for in my experience congenital retrodisplacement means an arrest of development of all the pelvic organs. There will be a uterus which is small, and when one opens the abdomen in these cases one will find that it is very difficult to bring the uterus up to the abdominal wall because the broad ligaments are very much shortened. In these congenital cases, as a rule, there are very few symptoms and they are best left alone. Operation usually is unsuccessful.

DR. ALBERT H. GOLDSPOHN, Chicago: Dr. Vineberg said that the displacement can be cured by the pessary. That I regard as true only if the pessary is used very early before involution of the uterus is complete. The round ligaments will involute with the uterus if they relax early and slacken. If the patient is advised to lie in the Sims position on either side, very soon, or within a few days after labor, the heavy uterus will fall into anteversion of its own weight. The patient is examined after she gets up, and a large pessary is introduced to hold the uterus forward. The patient will require frequent examinations. It will be necessary for her to get into the knee-chest posture for a few minutes morning and evening until involution is complete. So if, with this care on the part of the patient and the physician, the uterus never gets into retroversion after labor, and if this care is kept up for a year, those patients will usually be cured of retroversion.

DR. FRANK W. LYNCH, San Francisco: While there are 20 per cent. of women with congenital retropositions without symptoms, not all of them that are married become pregnant. Many of them are sterile. Our work suggests that if all of them become pregnant, 25 per cent. will develop symptoms. It also suggests that one fifth of women who never have retroposed uteri before pregnancy develop retroposition with

symptoms as a consequence of labor. Dr. Goldspohn's remarks show that any one who intends to be an intelligent obstetrician must follow a case for at least a year after delivery. I am perfectly certain that, when a physician follows all cases for a year after labor, he will recognize that we can do more for the health of women by intelligent care in the follow-up period than in the antenatal period. In our series, which has been running for seven years, we have obtained about 70 per cent. of what we call pessary cures. We term as pessary cures cases of retroposition that were corrected and held in place by a pessary for the greater part of a year and which did not again present a retrodisplacement after the removal of the pessary during a follow-up period of several months. We are perfectly aware that the uterus of many of these patients might have righted spontaneously, or might have remained upright after simple replacement. Yet it is not wise to take chances. We believe that the cause of retrodisplacement is a laceration of the base of the broad ligaments which permits of some spreading. Subinvolution favors retrodisplacements. The forward position of the uterus is far more favorable for good involution. We feel perfectly confident that the round ligaments are not strong enough to maintain a subinvoluted uterus in a forward position.

THE MIDWIFE PROBLEM IN THE UNITED STATES *

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American medical literature for more than the last decade has intermittently directed attention to the inadequacy of our laws governing midwives, which contain neither uniform provisions nor required standards. With the exception of the activities in a few cities, this situation has been allowed to drift along without regard for consequences.

The part played by faulty obstetric practice as a causative factor in high infant mortality at birth and during early infancy has for a number of years been emphasized constantly in all the efforts to reduce infant mortality. Largely as a result of this emphasis, the midwife situation has been brought to our attention in the light of a problem of national responsibility.

Statutory recognition of the midwife has existed in some states for many years, but recently the active interest in child hygiene has caused legislative bodies to pass many new regulations or to amend old ones, so that the laws are constantly changing.

Briefly summarized, existing legislation defines the position of the midwife in most states through the medical practice act, other statutes, or state board of health regulations, which in general cover: (1) Regulation of practice; (2) registration; (3) licensing and examining; (4) educational standards, and (5) penalties for violation.

Massachusetts is the one state in which the midwife has no legal status. Formerly she was required by law to report births which she attended, although by so doing she was liable to prosecution, as she was barred from practice under the medical practice laws of the state. This law was revised in 1920 and all reference to the midwife omitted. Lack of recognition, however, probably means that she exists, though ignored, in any locality having a foreign-born population.

Specific prohibitions in the medical practice acts or regulations of the state boards of health, although varying in definition and detail in the individual states, attempt to forbid vaginal examinations and operative procedures, and to require the summoning of a physician in all abnormal cases.

As a means of acquainting the midwife with existing legal regulations, and of affording opportunity for supervision of her work, thirty-six states require registration with either the state board of health, the local registrar or the local health officer. In seventeen states, only those midwives who have been duly licensed, after an examination, are allowed to register.

Examination, license or registration fees are customary. In some states, reexamination and new licenses are provided for at stated intervals.

Educational requirements are as yet unstandardized, and only ten states have any adequate regulation in regard to them in existing laws. Three states require the equivalent of a high school education, and two states a common school education in addition to training in midwifery in order to qualify for a license. While several states require applicants to read and write in English, others allow the use of an interpreter. Foreign midwifery diplomas are very generally recognized.

Penalties for violation of legislation concerning midwives are as varied as the regulations themselves. In general, the penalties cover either revocation of license, fine, imprisonment, or all of these.

In spite of the existence in most states of some form of law or rules and regulations, with the administrative authority lodged in state or local boards of health, it is generally recognized that, with the exception of an exceedingly few of the larger urban localities, no successful control or supervision of the midwife has been effected. Failure to enforce laws has in many instances been due not only to a lack of recognition of the gravity and enormity of the problem, but also to the lack of funds with which to operate successfully.

Provisions of the existing legislation, such as that barring from practice all non-English speaking applicants, no matter how acceptable their other qualifications may be, would indicate that much of this legislation has been framed with the definite aim of eliminating the midwife.

Efforts in a few of the larger cities show convincingly that supervision and educational standards tend definitely toward elimination of the most undesirable midwives and not toward encouragement of the practice of the midwife. In New York City, for example, where the Bellevue School for Midwives has been in operation since 1907 and where graduation from this school or its foreign equivalent is required for license to practice, and where violations of regulations are penalized by constant supervision or revocation of license, the number of midwives was reduced in ten years from about 3,000 to 1,600. During 1922, however, New York City still had 1,539 registered midwives.

The city of Richmond, Va., as late as 1921, adopted regulations governing the practice of midwives, as wholly inadequately trained midwives attended from twelve to fifteen hundred births in that city. An initial course of instruction, consisting of lectures and demonstrations, was prepared by the health officer. More than eighty midwives attended daily this course; but, as the result of the examination which followed the

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

TABLE 1.—*Summary of Laws and Regulations Governing Midwives in the United States, in Force, March, 1923*

State and Date of Enactment*	Examined and Licensed by State	Educational or Other Requirements	Registration	Laws and Regulations Governing Practice	Penalties for Violation of Requirements of Practice	Report Births	Report Ophthalmia and Use Prophylactic
Alabama..... Laws 1919	No; by county board	Knowledge of midwifery; freedom from communicable disease; moral character	Local	.....	.....	Yes	Yes †
Arizona..... R. S. 1913 and St. Bd. of Health Rules	Permit only	Endorsement of physician of district	Local	Shall not give drugs, give injection into birth canal or make internal examinations; shall secure physician for abnormal cases	(Permit valid so long as law and rules obeyed)	Yes	Report and advise use of prophylactic
Arkansas..... St. Bd. of Health Rules 1913	.....	.....	Local	.....	.....	Yes	Report and advise use of prophylactic
California..... Medical Practice Act 1917	Yes	Four years' high school, specified professional training and examination	Local	Shall not give drugs, use instruments, make internal examination or give injection into birth canal; shall attend normal cases only; must have specified equipment	Revocation of license; $100-$500 or 60-180 days, or both	Yes	Report; use of prophylactic optional †
Colorado..... Medical Practice Act 1917	Yes	Examination in such subjects as board deems necessary	Local	Shall not give drugs or anesthetics, use instruments or practice medicine in any other form	Revocation of license; $50-$300 or 10-30 days, or both	Yes	Yes
Connecticut..... General Stat. 1893	Yes	Graduation from school of midwifery; certificate of character and examination	State and local; annual	.....	.....	Yes	Yes †
Delaware..... Rev. Code 1915	.....	.....	Local	.....	.....	Yes	Yes †
Florida..... Laws 1915	.....	.....	Local	.....	.....	Yes	Report only
Georgia..... Code 1915	.....	.....	Local	.....	.....	Yes	Yes
Idaho..... Laws 1911	.....	.....	Local	.....	.....	Yes	Yes †
Illinois..... Medical Practice Act 1917§	Yes	Graduation from graded school and from school of midwifery, and examination	Local	Shall not give drugs or attend abnormal cases	Revocation of license; not over $100 or 6 months or both	Yes	Report only; † may advise or use with consent of parent
Indiana..... Medical Practice Act 1897	Yes	High school, 4 years, or equivalent; diploma from obstetric school, and examination	Local	.....	From $25 to $200 or revocation of license	Yes	Report and use in suspected cases
Iowa..... Laws 1897	Yes	.....	Local	.....	.....	Yes	Yes
Kansas..... Gen. Stat. 1915	.....	.....	Local	.....	.....	Yes	Report and use with limitations†
Kentucky..... St. Bd. of Health Rules 1915	Permit only, given by county health officer	Attendance at annual course of instruction; understanding of essentials of hygiene; freedom from communicable disease	Local, annual	Shall not give drugs, use instruments, give injection into birth canal; make internal examination or attend abnormal cases; shall observe other specified sanitary rules	(Permit valid so long as law and rules obeyed)	Yes	Yes †
Louisiana..... Act 1918	Yes	Such examination as required by state board of medical examiners	Local	.....	.....	Yes	Yes †
Maine.....	.....	.....	.....	.....	.....	Yes	Report; use prophylactic unless parents object
Maryland..... Code of 1910	Yes	Ability to read and write; certificate of physician showing attendance at 5 cases; 3 certificates as to character	Local	Shall not give drugs, use instruments, make internal examinations or attend abnormal cases	From $5 to $10; revocation of license for third offense	Yes	Report only
Massachusetts...	.....	.....	.....	.....	.....	....	.....
Michigan.....	.....	.....	.....	.....	.....	Yes	Yes
Minnesota..... Gen. Stat. 1913	Yes	Diploma from school of midwifery or examination	No	.....	Revocation of license	Yes	Report and use prophylactic unless parents object †
Mississippi..... St. Bd. of Health Rules 1912	Permit given by county health officer	Attendance at class instruction; investigation as to character, cleanliness, etc.	Local	Shall not give drugs, use instruments, give injection into birth canal or attend abnormal cases; must have specified equipment	From $5 to $100 or 60 days, or both	Yes	Yes †
Missouri..... Rev. Stat. 1909	Yes	Examination in obstetrics	Local	Shall engage in no other branch of medical practice	From $10 to $50 or 10 days to 2 mos. or both	Yes	Yes
Montana..... Rev. Code 1921	.....	.....	Local	.....	.....	Yes	Report; use of prophylactic optional †
Nebraska.....	.....	.....	.....	.....	.....	Yes	
Nevada..... Rev. Laws 1912	.....	.....	Local	.....	.....	Yes	Yes
New Hampshire.. St. Bd. of Health Rules 1916	.....	.....	Local	Shall not give drugs or use instruments; local health boards must have physician or nurse visit all cases attended by midwives	.....	Yes	Yes †
New Jersey..... Laws 1910	Yes	Common school; certificate or diploma from school of midwifery or maternity hospital having 1,800 hours' instruction, and examination	Local	Shall not give drugs; shall secure physician in all abnormal cases of mother or infant	$200 or 100 days if fine not paid; revocation of license	Yes	Report; † use of prophylactic optional
New Mexico..... St. Bd. Public Welfare Rules 1921	Permit and examination annually	Attendance at series of 10 classes of instruction, signing of midwife's pledge and freedom from communicable disease	Local	Shall not give drugs, give injection into birth canal, use instruments or make internal examination; shall call physicians in all abnormal cases, and have specified equipment	Certificate may be annulled	Yes	Yes
New York..... General Laws 1922 ¶	Examine and license annually	Ability to read and write (waived for foreigners); either diploma from school of midwifery or other satisfactory evidence	Local	Shall not give drugs, use instruments, remove adherent placenta, perform version or treat disease; shall attend normal cases only	License revoked	Yes	Yes
North Carolina.. Statutes 1919	Permit only	Must not be addicted to drugs or habitual drunkenness	State	Disinfection of hands of practitioners required	From $5 to $10	Yes	Yes †

TABLE 1.—*Summary of Laws and Regulations Governing Midwives in the United States, in Force, March, 1923—(Continued)*

State and Date of Enactment*	Examined and Licensed by State	Educational or Other Requirements	Registration	Laws and Regulations Governing Practice	Penalties for Violation of Requirements of Practice	Report Births	Report Ophthalmia and Use Prophylactic
North Dakota... Laws 1907	.....	.....	Local	.....	.....	Yes	Report; use prophylactic in suspected cases
Ohio..... Medical Practice Act 1910	Yes	High school or equivalent, diploma from school of midwifery or license of foreign country, and examination	Local	Shall not perform version, treat breech or face presentation or other abnormal conditions, or use instruments	Refusal, suspension or revocation of license for unprofessional conduct	Yes	Yes
Oklahoma..... Laws 1917	.....	.....	Local	.....	.....	Yes	Yes †
Oregon..... Laws 1915	.....	.....	Local	.....	.....	Yes	Yes
Pennsylvania.... Laws 1913 and Dept. of Health Rules	Yes	Graduation from approved school of midwifery; or other satisfactory evidence, and examination in English language only	Local	Shall not prescribe drugs or perform operations other than tying cord; shall notify inspector of all abnormal cases, also of delayed labor; other sanitary requirements	From $10 to $50 or 10 to 50 days, or both; license may be revoked or suspended	Yes	Yes
Rhode Island.... Laws 1918	Licensed only	.....	.....	State board of health makes rules and regulations	Not over $100 or 6 mo., or both; license may be revoked	Yes	Yes †
South Carolina.. St. Bd. of Health Rules 1920	Permit only	Completion of course of 10 lessons given by state board of health; signing of midwife pledge	Local	Shall not give drugs, give injection into birth canal or make internal examinations; shall secure physician for abnormal cases and obey rules of personal hygiene	Permit may be revoked	Yes	Report; use of prophylactic advised
South Dakota...	.....	.....	.....	.....	.....	Yes	Report only †
Tennessee.....	.....	.....	Local	.....	.....	Yes	Yes
Texas.....	.....	.....	.....	.....	.....	Yes	Shall use prophylactic †
Utah.....	.....	.....	Local	.....	.....	Yes	Report; advise use of prophylactic †
Vermont.....	.....	.....	.....	.....	.....	Yes	Yes †
Virginia..... Laws 1918 St. Bd. of Health Rules	Permit only	.....	Local	Shall not give drugs, give injection into birth canal (except when ordered by doctor); make internal examination or attend abnormal cases; shall obey other sanitary rules	Revocation of permit	Yes	Yes †
Washington..... Act of 1917	Yes	Common school education, diploma from school of midwifery, application endorsed by physician, and examination	Local	Shall not prescribe medicine or drugs; shall call physician in abnormal cases; shall report puerperal contagion or infectious disease to health officer	Revocation of license; $80-$200 or 10 days to 6 mo., or both	Yes	Yes
West Virginia....	.....	.....	.....	.....	.....	Yes	Yes †
Wisconsin..... Statutes 1919	Yes	Diploma from college of midwifery, evidence of good moral and professional character, and examination	Local	Shall not administer drugs, use instruments or any artificial means, remove adherent placenta, or undertake any other form of medical practice	Revocation of license; $25-$100 or not over 6 mo., or both	Yes	Yes †
Wyoming.....	.....	.....	.....	.....	.....	Yes	Yes

* Date refers to passage of act without reference to subsequent amendments.
† Gratuitious distribution of a prophylactic is made by the state health authorities.
‡ Bill defining practice before present general assembly.
§ This law declared unconstitutional by the Illinois Supreme Court.
¶ New York City and Rochester have special laws.

completion of the course, only forty-seven permits were granted.

When Alabama's amended state law regulating midwife practice became effective in January, 1920, the city of Birmingham instituted classes for the midwives then licensed in the city. After a discouraging year of weekly classes, giving instruction in prenatal, maternity and infant care, it was decided to eliminate the midwife as far as possible from the city. The few who continued to practice contrary to instructions were prosecuted. Simultaneously, efforts were made to enlist the interest and cooperation of physicians in communities where midwives were extensively employed. The physicians agreed on a minimum charge for delivery, while prenatal and postnatal care was provided through volunteer medical service in a community clinic and by a visiting nurse service.

The extension and adaptation of this plan to include the more isolated districts of the surrounding county have been contemplated for some time, but as yet have not been satisfactorily worked out because of the difficulty in securing medical service.

The experience of these few cities, as well as that of others which might be given, serves to demonstrate to the satisfaction of an element of the medical profession—the highly specialized urban practitioner—a method of desirable and effective elimination. We have long heard that the one sure way to eliminate the midwife was to educate her. Sufficient emphasis, however, seems not to have been placed on the fact that elimination has been effective in its results only so far as medical and nursing facilities have been substituted for the untrained midwife. It is to be noted that, in all of these eliminative urban demonstrations, such public institutions as visiting nursing service, prenatal and maternity consultative service, or even actual confinement and postnatal medical and nursing care have been initiated. Obviously, such services exert no unimportant influence in raising the standard of practice among the licensed midwives of these communities, with the result that those remaining under supervision are generally admitted to be an asset in public health work. In New York City in 1917, nearly 2,000 women were brought to the prenatal clinics by midwives.

STATE PROGRAMS

The intense interest in maternal and infant hygiene during recent years has caused new attention to be paid in practically every state to the midwife problem, which consequently assumes a national aspect.

Within the past year, or, more definitely, since the initiation of activities made possible by the funds provided by the enactment of the federal Maternity and Infancy Act, thirty-one states have simultaneously

undertaken to attack the long neglected problem of midwife practice. Two reasons for finally facing the problem suggest themselves, namely, (1) a public opinion already expressed in the statutory regulations of a large majority of the states, and (2) the fact that the subject is innocuous and scarcely likely to engender opposition from the medical fraternity.

For purposes of information, comparison and evaluation, the federal Children's Bureau has recently sent out a questionnaire in order to determine just what activities relating to the midwife have developed under the various state programs for the promotion of the welfare of maternity and infancy. According to the reports received, thirteen states have already begun or are planning to begin initial state-wide surveys, while six states are making only county or community surveys. Ten states acknowledge that they know very little about midwives; others claim that the problem is a negligible one; eight states—Maine, Michigan, Nebraska, South Dakota, Texas, Vermont, West Virginia and Wyoming—do not register, examine or license midwives, although the majority of these states do require reporting of births.

TABLE 2.—*Numbers of Midwives Authorized to Practice, Percentage of Births Attended, and Maternal and Infant Mortality Rates for the States for Which Such Data Are Obtainable*

State	Midwives: Authorized to Practice	Midwives: Others Estimated	Midwives: Percentage of Births Attended	Mortality Rates per Thousand Live Births in Birth Registration Area Bureau Census 1921: Maternal	Mortality Rates per Thousand Live Births in Birth Registration Area Bureau Census 1921: Infant
Alabama	1,862	*	32	...	..
Arizona	45	*	12	...	..
Arkansas	181†	*	17	...	..
California	104	*	8	6.8	66
Colorado	15	25	*	...	..
Connecticut	123	*	16	5.3	73
Delaware	200	*	16	6.3	98
Florida	*	2,000	38	...	..
Georgia	1,800	*	*	...	..
Idaho	100	*	*	...	..
Illinois	1,115	*	*	...	..
Indiana	254‡	*	5	6.9	71
Iowa	40	*	0.1	...	..
Kansas	*	*	*	6.4	63
Kentucky	2,500	*	18	6.3	62
Louisiana	220	1,808	47	...	..
Maine	**	65	*	7.4	88
Maryland	339	346	22	6.7	94
Massachusetts	**	117§	*	6.5	76
Michigan	**	1,162	7	6.9	79
Minnesota	145	*	*	5.7	59
Mississippi	3,218	991	48	9.5	68
Missouri	803¶	*	*	...	..
Montana	334	*	3	...	..
Nebraska	**	20	2	6.6	59
Nevada	*	*	*	...	..
New Hampshire	7	None	*	6.2	87
New Jersey	415	262	27	5.9	74
New Mexico	**	*	*	...	..
New York	1,976	*	11#	6.3	75
North Carolina	2,500	4,000	35	7.3	75
North Dakota	*	*	*	...	..
Ohio	*	*	*	7.2	75
Oklahoma	None	*	*	...	..
Oregon	16	*	*	7.4	51
Pennsylvania	*	1,500	*	6.8	88
Rhode Island	47	*	*	7.1	93
South Carolina	990	3,715	*	9.8	96
South Dakota	**	133	3	...	..
Tennessee	815	1,000	12	...	..
Texas	**	300	*	...	..
Utah	*	350	*	7.3	73
Vermont	**	None	*	7.3	78
Virginia	6,036	*	35	7.0	79
Washington	50	*	4	7.8	55
West Virginia	**	*	*	...	..
Wisconsin	361	*	10	5.8	72
Wyoming	*	*	*	...	..
Total	26,627‖	17,794‖			

* Information not supplied.
** Do not examine, license or register.
† In six counties only.
‡ Number licensed since 1897.
§ In a surveyed district only.
¶ Number registered since 1887.
# Does not include New York City.
‖ Includes only numbers reported.

The midwife problem in the United States is a peculiarly conglomerate one because of the many nationalities and races of which our cosmopolitan population is composed, each with its special traditions and customs.

Contrast the Southern states, having thousands of totally untrained and illiterate "grannies" (Mississippi, 4,000; North Carolina, 6,500; Virginia, 6,000), with New Hampshire, having only seven registered midwives. Incidentally, there are ninety towns in New Hampshire without a resident physician, and a recently enacted law provides an annual appropriation of $1,000 per town as part of a physician's salary in the hope of inducing young physicians to settle in rural communities.

New York State, exclusive of New York City, reports that the total number of licensed midwives is diminishing annually, and at present there are twenty-two counties of the state with no licensed midwives. The 428 midwives who were permitted to practice in the state in 1922 represented twenty-three nationalities—the Polish, Italian, German, native born American and Slavic predominating. Groups of these nationalities or others will undoubtedly be found in all the densely populated industrial and mining states. Colorado reports fifteen registered midwives as representing six foreign nationalities. In the Pacific states, the large number of Japanese midwives adds another phase to the situation; while the Southwest, where among the Spanish-Americans practically every married woman in rural areas is a potential midwife, presents its distinctive problems.

Parallel with this diversity in nationality runs a comparable divergence in numbers practicing. The 1920 occupational report of the Bureau of the Census reported 4,773 midwives practicing in the United States. Recent inquiry into this subject brings the report that the total number of midwives authorized to practice in thirty states is 26,627, although, with few exceptions, the number registered is admittedly not the total number practicing. The estimated total from the same states is about 45,000. Even this number is undoubtedly an underestimate. The percentage of births attended by midwives varies from 48 in Mississippi to 2 in Nebraska. In one state (North Carolina) the percentage of negro births attended by midwives was 73.5, in 1921.

Michigan's recently completed survey shows that there were 96,035 births reported in 1921, and that 6,632 birth certificates were returned by 1,162 midwives. One birth in every eleven and one-half occurred without the attendance of a physician.

Virginia reported 69,116 births in 1921, one third of which were attended by the 6,036 registered midwives. Among this number were 1,418 white midwives.

Confronted with such concrete facts as these, the state health authorities are somewhat perplexed in their effort to find practical means of handling the midwife situation. However, eighteen progressive health departments have already decided that trained, licensed and supervised midwives should be provided at least for rural communities. In ten states the number of midwives is sufficiently large to warrant the employment of a supervisor of midwives. In many of the states, provision has been made for some type of

instruction of midwives, either through printed matter in the form of letters giving simple rules and regulations, or bulletins, or by class or individual instruction. Class instruction is given by a physician, usually a health officer, by public health nurses, and in one state by a registered midwife. Class meetings vary in number from one or two single meetings to regular monthly meetings or a series of meetings at shorter intervals. The instruction consists of an explanation of the laws governing the practice of midwifery, the limitations of the midwife, and elementary teaching of the technic of a normal delivery and subsequent care of mother and infant.

One state department has on its staff two women physicians who speak several languages, and who instruct midwives working in centers of foreign population.

Another state employs a well trained woman obstetrician who travels about the state in the capacity of consultant. In isolated rural communities, both physicians and midwives bring her their cases, especially those which are complicated, for consultation.

As a result of these methods of instruction, states report not only a marked improvement in the type of care which the midwife gives, but also that physicians are being called much more frequently for abnormal or complicated cases. Three states report a decided decrease in the number of registered midwives following the introduction of this instruction and supervision. One of the sparsely settled but widely extending Western states is considering the practicability of subsidizing, from church funds, well trained midwives in order to provide and insure for women on the isolated farms at least some trained service during childbirth.

PROBLEMS RELATING TO OBSTETRICS AND PEDIATRICS

The material here presented indicates the plans which have already been instituted in the effort to meet the problem of making available, outside the large urban centers, better care for mothers before, during and following childbirth.

While the developments outlined indicate only the public health aspects of the midwife problem, largely because of the fact that regulatory supervision is vested with the public health departments, definite problems of concern and interest to two special branches of medicine, namely, obstetrics and pediatrics, are also involved.

It is at once obvious that much of the success of pediatrics depends on the normality of the expectant mother and of the unborn infant, and on the conditions which provide normal birth and adequate skilled care in the first weeks after birth. Faulty technic in the care of the new-born largely determines whether his future will be one of invalidism or of health. In most instances, midwives are of the same nationality as the women they attend, and retain most of the practices, traditions and superstitions that have been transmitted for generations in these groups. Midwives are frequently consulted by mothers regarding the care of the infants for six months or more after birth. If one is familiar with some of the age-old, unclean practices of foreign midwives, one is not surprised at the frequency with which tetanus, undoubtedly due to dirty cord dressings, is found in the new-born. One marvels that any infant survives the well meaning colored midwife's routine during the interval between birth and the appearance of breast milk, when almost invariably a pacifier of raw white pork is given soon after birth for its supposed laxative effect, supplemented at frequent intervals by curious and oft-times obnoxious concoctions known as "teas."

Improved reporting of births has been credited to the midwife as soon as she comes under supervision. The fundamental importance of early and accurate birth registration is appreciated by all workers interested in preventive health measures.

Marked improvement of ophthalmia neonatorum has occurred among midwives' cases since improved legislation now makes the use of a prophylactic by physicians and midwives compulsory in twenty-nine states. Free prophylactic outfits are being distributed in twenty-four states, while the reporting of inflammatory eye conditions is compulsory in forty-five states.

The midwife's relation to the public health official is in the main that of compliance with statutes or rules or regulations of the health department, while to the obstetrician or general practitioner her responsibility is more definitely outlined. Many of the state regulations specify the conditions under which a physician must be called, such as abnormal symptoms during pregnancy, miscarriage, hemorrhage, abnormal presentation, retained placenta, convulsions, and prolapse of cord. Most of these regulations have been dictated by bitter experience, but with no specific effort to assist the midwife in her imposed responsibility of securing skilled assistance. Training and supervision have so far tended to diminish the numbers of practicing midwives, without providing adequately trained medical or nursing substitutes.

Interest in maternal and infant hygiene is now growing at an unprecedented rate, and I believe that it is safe to predict that public demand for more and better prenatal care, skilled care at confinement, whether at home or in the hospital, and adequate postnatal care of mother and infant will result in such provisions being considered essential needs in every community in the very near future.

For the last few years, in the medical schools, efforts have been directed toward the teaching of better obstetrics. All obstetricians are familiar with the average poor standard of confinement care given by the general practitioner in rural sections, often through no fault of his own. In several states an effort to raise the standard of rural obstetric care is being undertaken through extension services of state universities and their medical schools. Films are being used for teaching purposes in county medical societies, the head of the department or an assistant obstetrician serving as instructor, thus bringing postgraduate work to the rural practitioner.

In several states the maternity and infancy programs include the preparation by local club women of sterile obstetric packages for rural home confinements. The obvious value of such an undertaking is not only the definite assistance to the attending physician but also the education of the community.

My purpose in this paper has been, not so much to reiterate the legal status of the midwife in this country, as to show the trend of rapidly developing activities in this long-neglected field.

While existing legislation gives the midwife recognition but controls her ineffectually, if at all, the problem still to be solved is whether adequate provision shall

be made for medical attendance at every confinement and the midwife abolished, or whether midwives shall be trained and practice under strict supervision and control. Obviously, there is no point in eliminating even the untrained midwife without making qualified substitutes available.

With almost one half of the states already undertaking the supervision and training of the midwife, perhaps one may conclude that from the point of view of the public health administrator, control at least is at present a necessity. Whether or not uniformity of regulation, training and supervision on a national scale similar to that of most foreign countries is feasible or desirable is a problem suggested for future consideration. A small group of New York obstetricians has decided that one of the greatest needs in maternity service is public health nurses with a special course in midwifery, particularly in rural areas where there are either very few physicians or none at all. Such a course is now being offered as an affiliated one with the Bellevue School for Midwifery.

The problem of the midwife in the United States is sufficiently important and complex for national concern and responsibility, and the medical profession will be looked to for its solution, since a rapidly crystallizing public demand for better medical and nursing care, as it relates to maternity and infancy, is involved.

RESULTS GAINED IN MATERNITY CASES IN WHICH ANTENATAL CARE HAS BEEN GIVEN*

FRED L. ADAIR, M.D.
AND
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MINNEAPOLIS

It is now well recognized that maternal welfare includes both medical and social activities. It is not our purpose to go into a consideration of the latter phase, but we wish to emphasize the importance of having this sort of work closely coupled with the medical activities.

We include under medical activities those which fall within the scope of nursing as well as those which fall to the lot of physicians and surgeons. The medical men to whom women come for maternity care should not take a narrow obstetric view of their patients. We as obstetricians must be more than obstetric specialists, and must not only consider the general health and welfare of the mother but also constantly remember the life of the offspring committed to our care.

One might ask when prenatal care should begin. One could answer that it begins in the antenatal period with the prevention of disease and prematurity. It is of great importance in infancy in the prevention of the development of rachitis, which causes in later life obstetric complications.

In the study of a maternity case one should develop the history of the patient with diseases; and, of course, the facts of obstetric importance should be included. A careful physical examination should be made with special obstetric observations. Subsequently the patient should be under continuous supervision, and routine observations made of such commonplace things as weight, temperature, pulse, hemoglobin, blood pressure, urine, and certain other symptoms both subjective and objective. This has been our procedure for many years, and we shall try to express as definitely as possible the results we have been able to obtain in 2,000 cases of pregnant women who have come under our supervision for antenatal care. This series does not include patients seen in consultation, but only those who came of themselves or were referred by physicians to be under our supervision and care. As we have given special attention to this type of work, it would be only natural to expect a somewhat higher percentage of abnormal cases than the common run of obstetric practice would show.

We have included a considerable number of expectant mothers who have sought our care because of difficulties in previous pregnancies or because they had knowledge

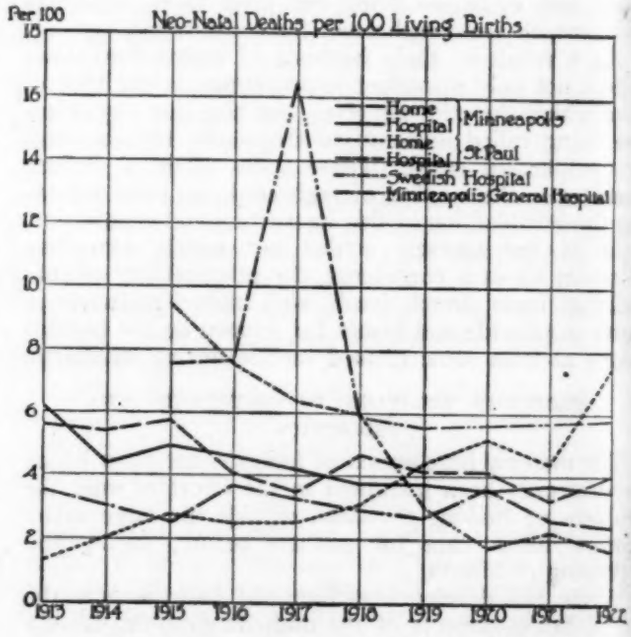

Chart 1.—Neonatal deaths per hundred living births.

of some complicating condition. We have also incorporated a group of referred cases sent by physicians who did not wish to take the responsibility of handling the pregnancy and labor in the presence of certain complicating conditions.

In our series we have included all cases of intra-uterine pregnancy in which we have given prenatal care within a specified time. This is made up of our last 2,000 cases prior to May 1, 1923. The only cases excluded are those in which we have given no antenatal care which were seen in consultation either when the patient was in labor or after the development of some serious complication. We feel justified in excluding these cases because in this paper we are trying to reach some conclusions regarding the results that can be obtained by careful supervision of obstetric patients.

In our 2,000 private cases of intra-uterine gestation there were 902, or 45 per cent., primiparas and 1,098, or 55 per cent., multiparas.

The gestation was terminated before the period of viability in 105 pregnancies, or 5 plus per cent. In 1,895, the gestation reached the period of infant via-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

bility. There were nine multiple pregnancies in the group, making a total of 2,009 offspring. There were two women who died undelivered, leaving a total of 2,007 fetuses and new-born. The abortions as given above account for 105 of these, which leaves 1,902 pregnancies which went to the period of infant viability. Of these, 1,834, or 91 plus per cent., resulted

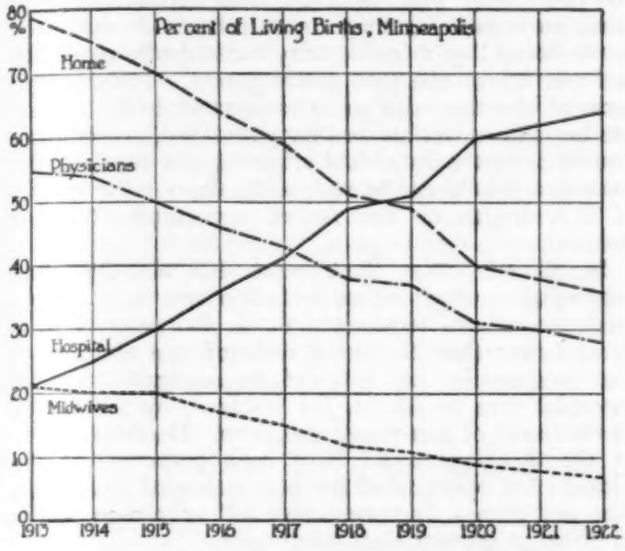

Chart 2.—Percentage of living births in Minneapolis.

in living infants, and sixty-eight, or approximately 3 plus per cent., were stillborn.

There were six maternal deaths, or 0.3 per cent., and forty-two, or 2 plus per cent., of neonatal deaths.

ABORTION IN RELATION TO ANTENATAL CARE IN ITS EFFECT ON THE OFFSPRING

Threatened abortion, miscarriage, and premature labor constitute a very important phase of prenatal care. Among our cases there were seventy-four women who had symptoms and signs which led to this diagnosis and whom we were successful in carrying to a period of infant viability by the use of absolute rest in bed, with doses of morphin and atropin pushed to the physiologic limit, if necessary. Of these, twenty-nine were primiparas and forty-five multiparas. Two of these babies died neonatal deaths. The others survived. There were fifteen therapeutic abortions done in our routine cases, a percentage of 0.7. The indications for the performance of this operation will be considered under pathologic conditions in the mother, as, in our opinion, it is almost axiomatic that a therapeutic abortion could never be considered to be in the interest of the offspring. It is perhaps unnecessary to speak of this, but some physicians fail to grasp this self-evident fact.

There were three abortions which followed operations done on the genital organs. There was one case of hydatidiform mole among our routine cases, a percentage incidence of 0.05. There were also three ectopic pregnancies, an incidence of 0.15 per cent. Antenatal care could have no effect on the last two conditions so far as the welfare of the fetus is concerned.

Of the remaining eighty-nine abortions, thirty-one were incomplete and fifty-eight were complete. Of these, thirty occurred in primiparas and fifty-nine in multiparas.

We have not considered missed abortions or pathologic abortions in this discussion because at present one is at a loss to know how to benefit the offspring in these cases by antenatal care.

We should like to mention cases giving a history of habitual abortions in whom no definite cause for its occurrence could be found. We have a small series of these cases in which corpus luteum was administered hypodermically during the first trimester of pregnancy. It is difficult to know what would have occurred in these cases without its use, but a number of the patients have gone through to term and given birth to normal living infants for the first time.

PREMATURITY

Prematurity is a very serious handicap to the new-born. In our series of cases there were born alive seventy-three premature infants, which is a percentage of 3.7 of the total pregnancies and 4.0 per cent. of the living births. Of these premature infants, sixteen, or 22 per cent., died within one week after birth; the others survived the neonatal period. The sixteen deaths of premature infants made up 36 per cent. of our neonatal deaths. Of the sixteen infants, five were nonviable, which accounts for 32 per cent. of the neonatal deaths of premature infants. The causes of death among the others were toxemia, two; accidents of pregnancy and labor, six, and prematurity with cause not determined, three.

As already stated, sixteen of our forty-two neonatal deaths were in premature infants. Of the remaining twenty-six, the deaths were in babies born at term; eleven of these had some brain injury, probably due to or associated with hemorrhage resulting from trauma or hemorrhagic disease. Congenital defects caused eight deaths. The nature of these defects was:

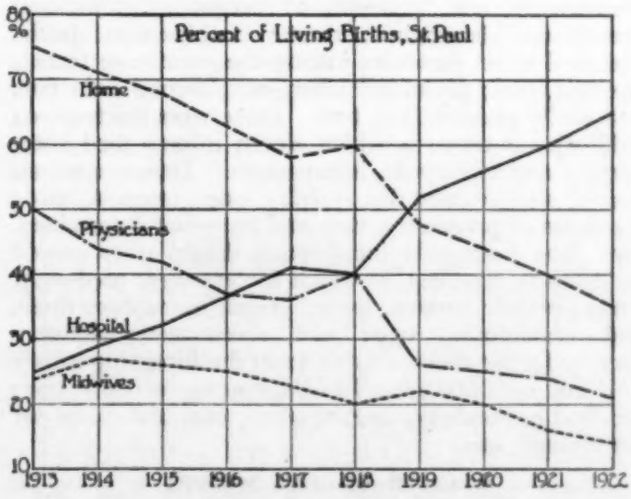

Chart 3.—Percentage of living births in St. Paul.

mongolism, one; cardiovascular disease, four; defect of the central nervous system, two; defect of biliary tract, two, and enlarged thymus, one. The other six infants died from: toxemia, one; infection, one; accident of labor, one, and causes not determined, three. We note that 1.4 per cent. of our living term babies died neonatal deaths, and in all living births there were 2.3 per cent. of neonatal deaths.

STILLBIRTHS

Stillbirths make up one of the great and important obstetric problems, and they might be divided into two groups:

First, those infants which die before the onset of labor and can be saved only by antenatal care. It is not to be supposed that we can save all of these. We

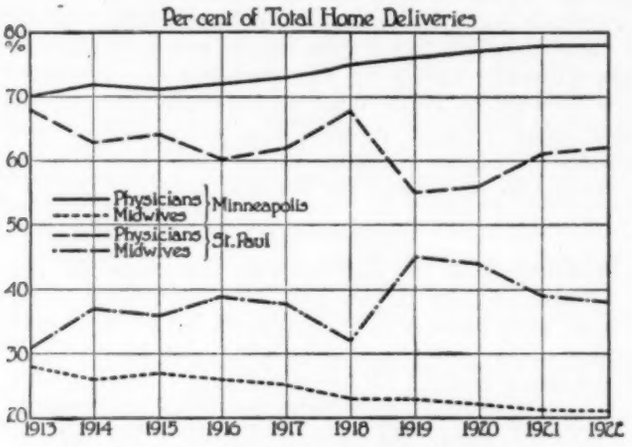

Chart 4.—Percentage of total home deliveries.

can save some, and, as our knowledge increases, probably the lives of more can be preserved.

Second, those infants which lose their lives during labor. The lives of these infants are not to be saved by antenatal care so much as by better natal care. In all, we had sixty-eight stillbirths, which is a percentage of 3.7 of the total living births. Of these, thirty-seven, or 2 per cent., were born at term, and thirty-one, or 1.7 per cent., were prematurely born. Of the prematurely stillborn, twenty-five died before the commencement of labor and six died during labor. The causes of the antepartum deaths were syphilis, two; toxemia, eleven; maternal infection, two; hydrops fetalis, two; monstrosity, one; accidents of pregnancy, four, and causes not determined, three. Intrapartum deaths occurred in six instances among the premature births: toxemia, two; prolonged labor, one; second twin one, and faulty presentation, two. There were thirty-seven stillbirths at term, in which eleven infants died antepartum and twenty-six intrapartum. The antepartum deaths were caused by syphilis, one; toxemia, two; accidents of pregnancy, two, and cause not determined, six. The twenty-six intrapartum deaths were caused by dystocia, nineteen, in which forceps were used eight times; podalic version, three; breech extraction, three, and craniotomy, two; and spontaneous delivery occurred three times. Aside from the foregoing causes of death were prolapsus funis, three; monstrosity, one; cerebral hemorrhage, one; toxemia, one, and cause not determined, one.

WELFARE OF THE MOTHER

The other important problem involved, aside from the welfare of the offspring, is that of the mother. It is very vital to know what can be accomplished for her.

In the first place, good natal care can be secured only by good antenatal supervision, because by this method alone can proper and adequate preparations be made for the care of mother and child during the natal and postnatal periods.

Another important problem is the detection and eradication of abnormal conditions in the pregnant woman, with ultimate benefit to both her and the offspring. We wish to present some data, gathered from our series of private cases, bearing on this problem.

We will first consider the question of abortions. An abortion is more serious for the offspring than for the mother. Aside from the effect on the maternal impulse, the woman suffers no ill effects from the abortion except such as result from certain complications, such as hemorrhage or infection. It should be remembered that infection may cause death, morbidity and sterility of the prospective parent. The management of abortion is of great importance to the mother for her future welfare and happiness and, even though disastrous to the individual offspring, the result of the treatment should not be such as to deprive the woman of life, health or the future opportunity to bear children.

In all our cases there were 105 abortions and miscarriages, which means that about one in ten of our total pregnancies terminated in an abortion. This is much better than the usual ratio of one abortion to four pregnancies and is a definite accomplishment of antenatal care as shown, for instance, by the results of treatment of threatened abortions. Doubtless, more of the abortions could have been prevented if the patients had appreciated the importance of early symptoms and if some had been more willing to cooperate in an effort to prevent their occurrence.

In our series there was no fatality among mothers. There were no serious infections. About one third of our patients were curetted.

The incidence of pathologic abortion in this group was not high.

Nonobstetric operations on the genital organs of the pregnant woman are not frequently required. In our routine cases they did not exceed 0.5 per cent. Of patients operated on in early pregnancy, fully 50 per cent. had a termination of the pregnancy following the gynecologic operation. We feel, therefore, that gynecologic operations on the pregnant woman should be undertaken only when the interest of the prospective mother demands such interference, and that it should be done with the understanding that the fetus has not better than an even chance of survival. Therapeutic abortions are done to preserve the health or life of the prospective mother alone.

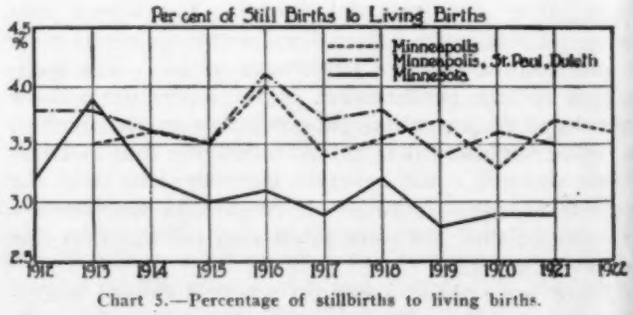

Chart 5.—Percentage of stillbirths to living births.

In our routine patients it was deemed necessary to terminate the pregnancy by therapeutic abortion in fifteen instances, or 0.7 per cent. of the cases. The reasons were: tuberculosis, five; hyperemesis gravidarum, six; cardiac disease, one; mental disease, two, and pyelitis, one. The subsequent course of the disease in these patients seemed to justify the procedure. It was not often that disease in the mother justified the

early termination of pregnancy, and in those it was of a persistent and more or less chronic character.

We have encountered many serious acute infections, especially of the respiratory tract; but, owing to careful supervision of the patients, who have been kept quiet, the mortality has been low. We lost three patients from pneumonia that developed during pregnancy. Cardiac disease is relatively frequent; but, with careful attention, serious complications are rare. In one instance of a mitral stenosis with a broken compensation occurring early, it was thought best to terminate the pregnancy. In another instance with a mitral stenosis, the interruption of pregnancy was seriously considered, but abandoned. The patient died subsequently from a pulmonary edema after labor followed by pneumonia. A clinical diagnosis of cardiac disease was made in about 4.5 per cent. of our cases. This emphasizes the importance of an antenatal examination of the cardiovascular system.

Thyroid hypertrophy was commonly found, and nontoxic goiters were not uncommon. We have had no toxic goiter in our prenatal series of cases. It may be regarded as a rare occurrence.

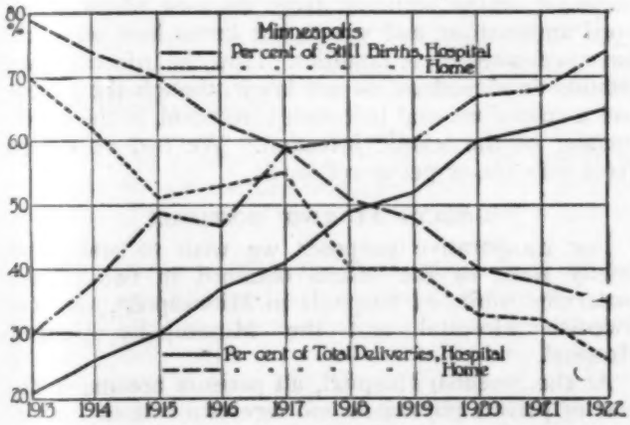

Chart 6.—Percentage of stillbirths and of total deliveries, Minneapolis.

Affections of the gallbladder and appendix which require operation are not of great frequency, but should be kept in mind.

Acute disturbance of the gastro-intestinal tract associated with diarrhea should be promptly and carefully treated, as such affections are very likely to be followed by abortions.

Diseases of the urinary tract are not infrequent. Cystitis and pyelitis are seen rather frequently, but with appropriate care usually result favorably. It is rarely necessary to terminate the pregnancy because of pyelitis.

In the type of patients encountered in this series, acute infections of the genital tract, such as gonorrhea, have been rare. The few cases which we have cared for have responded slowly to treatment, but no serious complications developed. Treatment should begin as early in the pregnancy as possible and be carefully carried out to as complete a cure as possible before the termination of pregnancy.

Syphilis is of great general importance, but in our group relatively few cases were found, which accounts for the few fetal deaths from this cause. One patient died undelivered while receiving active treatment. The patient died in a rapidly developing coma, the exact cause of which was never determined. The incidence of syphilis in our cases was not over 0.5 per cent.

Diabetes is occasionally seen, but with careful attention the patients may be carried through pregnancy with relative safety. The ultimate outlook has in the past not been particularly good. We had no fatalities in six cases.

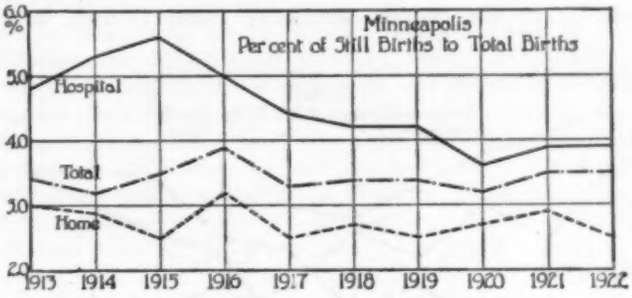

Chart 7.—Percentage of stillbirths to total births, Minneapolis.

We had many patients with some toxic symptoms, 143 in all, which is an incidence of about 6.5 per cent. Of these, there were thirty-eight with rather mild symptoms. Of the others, thirty-three had marked hyperemesis, and in six of these it seemed necessary to empty the uterus. There were no fatalities in this group. The others were delivered of viable infants with one exception. In this case, complicated with syphilis, there was a stillbirth. Most of the other cases showed varying degrees of hypertension, albuminuria and edema. The results with regard to the offspring have already been mentioned. So far as the mothers are concerned, we have had no fatalities when we have had an opportunity to give antenatal care. Convulsions occurred in eleven of the patients either antepartum, intrapartum or postpartum.

It was deemed advisable to try drug induction in a considerable number of the cases, and the bag was resorted to in seventeen of them.

Vaginal hysterotomy was done in one instance and abdominal cesarean section was done twice. Other methods of delivery were resorted to as seemed necessary in individual cases.

We feel justified in concluding that maternal, but not fetal, deaths from toxemia may be practically elim-

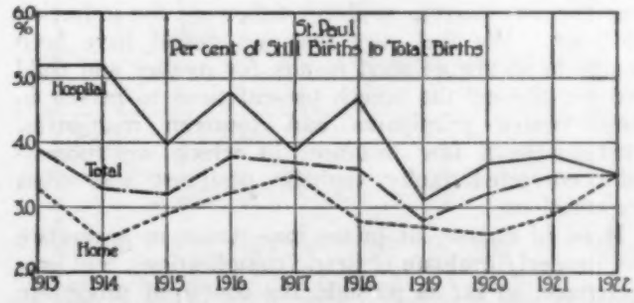

Chart 8.—Percentage of stillbirths to total births, St. Paul.

inated by adequate antenatal supervision and intervention at the proper time.

Nephritis is, of course, an important complication of pregnancy, but is of much less seriousness than toxemia because of its lesser frequency and danger. It should be differentiated from preeclampsia, which can usually be done by a careful history. The presence

of many casts in the urine is suggestive of nephritis. It should be remembered that a toxemia may be superimposed on a nephritis. We had six cases of true nephritis in our series. The immediate outlook for the mother is not bad so far as life is concerned. Fetal death is not uncommon, resulting in one half of our cases.

Focal infections occurred with relative frequency, usually in the mouth, accessory nasal sinuses, and

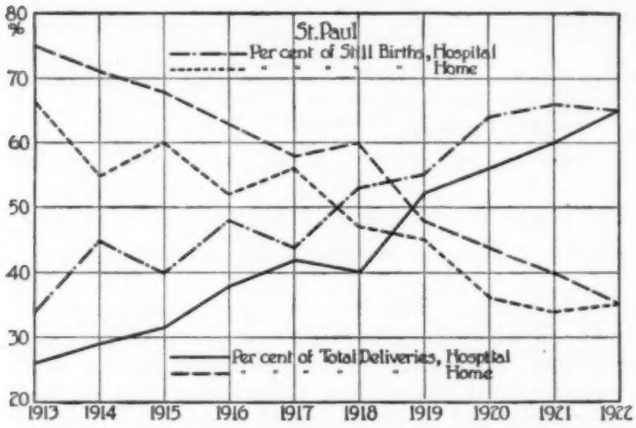

Chart 9.—Percentage of stillbirths and of total deliveries, St. Paul.

pharynx. These infections were both acute and chronic, giving rise frequently to both local discomfort and remote symptoms. We have noted such definite infections in 134 instances. Oral infections were demonstrated in seventy-eight of the cases, definite tonsillar infections in thirty-three, and sinus trouble in twenty-three cases. These conditions should receive appropriate treatment even during pregnancy. Nine of these patients, or about 7 per cent., developed definite toxic symptoms of the preeclamptic type. Abortions were noted in five of these cases. The incidence of the two conditions mentioned was somewhat more frequent in this group than in the general run of cases.

The correction of malpositions is of considerable importance. This can be done in some cases during the antenatal period. In twenty-six instances we were successful in permanently converting breech presentations to cephalic positions. In this group, two forceps operations were necesary to complete the delivery. There was one intrapartum stillbirth following the induction of labor. We feel sure that we should have been unable to secure as good results for mother and child had we allowed the breech presentations to persist in these twelve primiparas and fourteen multiparas. There were a few instances in which we successfully corrected faulty cephalic positions and cross presentations.

It is, of course, of prime importance to appreciate and properly evaluate obstetric complications, and predetermine, so far as possible, the course of procedure during labor. That there is room for improvement in our series is shown by the considerable number of infant deaths due to dystocia. The recognition of small pelves and oversized babies, as well as a careful history of events in previous labors is of great assistance to us in deciding beforehand the best line to follow in the conduct of these cases. In our community, pelvic deformities are relatively uncommon and usually of a mild degree. This perhaps makes us a little less keen in looking for them, and most of those we do discover are relatively difficult to diagnose.

Malpositions of the uterus, especially retroversion, are rather frequent, and often give rise to unpleasant symptoms and may be a factor in the production of abortions. Patients should always be examined for the presence of this condition, and, in our opinion, we have relieved many mothers of symptoms and prevented a considerable number of abortions by the early recognition and appropriate pessary treatment of this condition.

Malformations of the genital tract should be kept in mind, but are of relatively infrequent occurrence.

In order to avoid being accused of important omissions, we should like to mention the necessity of proper advice to mothers regarding the mode of living, personal hygiene in general, and also the care of the genitalia and breasts.

Maternal deaths were too frequent to suit us, but the percentage was not high, about 3.3 per thousand living births. The causes of deaths in these cases were: cardiac insufficiency, one; tetanus, one; antepartum influenzal pneumonia, two; antepartum death due to acute cerebral disease in a syphilitic patient, one, and postpartum lobar pneumonia, one. One half of our maternal deaths occurred from diseases which developed antepartum, and we do not know how we could have prevented these fatalities. How the infection with tetanus developed we do not know, though the patient had a suspicious oral infection antecedent to the development of the tetanic infection. We had no deaths from toxemia or puerperal sepsis.

RESULTS AT TWO HOSPITALS

For comparative purposes we wish to enumerate briefly some of the results obtained in two of the maternity wards of hospitals in Minneapolis, viz., the Swedish Hospital and the Minneapolis General Hospital.

At the Swedish Hospital, all patients are under the care of private physicians and receive a certain amount

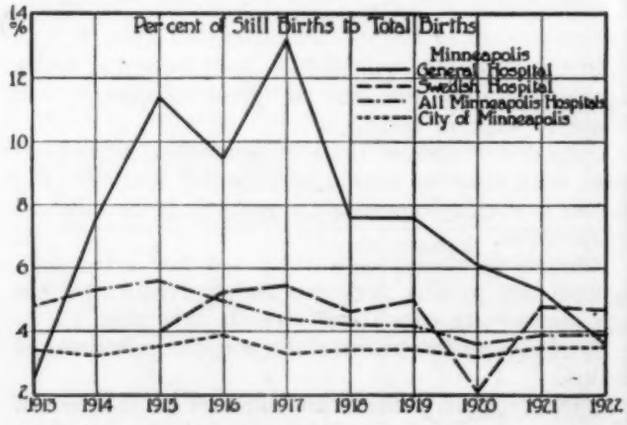

Chart 10.—Percentage of stillbirths to total births, Minneapolis.

of antenatal care. We have in this series 1,512 cases of pregnancy admitted to the hospital from November, 1921, to April, 1923. There were 206 cases of abortion in this series, a percentage of 13. Therapeutic abortion was done thirteen times for tuberculosis, toxemia and mental conditions. There were 104 premature births, a percentage of about 7. Over one fourth of these premature infants were either stillborn or died neonatal deaths. There were fifty-eight stillbirths and thirty-four neonatal deaths, a percentage of 4.7 and about 3,

respectively, in relation to the total living births. There were eight maternal deaths, or 6.5 per thousand living births. Of these, five were due to toxemia, and might have been prevented by better prenatal care. There were no deaths due to puerperal infection, which speaks well for the hospital technic.

In the Minneapolis General Hospital, during 1922, there were 210 abortions; and the reported births were

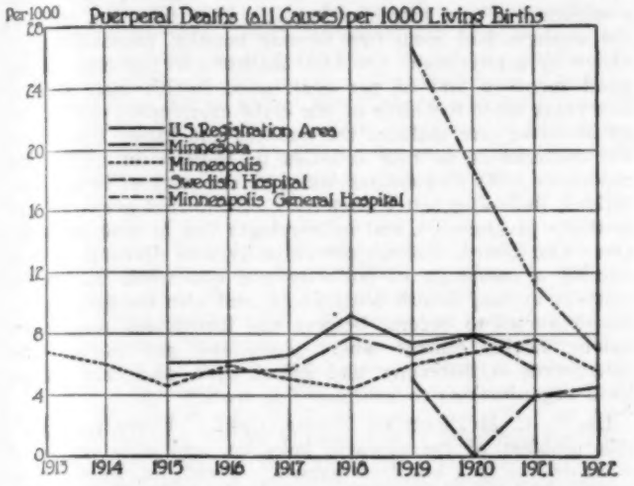

Chart 11.—Puerperal deaths (all causes) per thousand living births: comparison of statistics for registration area of Minnesota, Minneapolis, and certain Minneapolis hospitals.

1,069, making a total of 1,279 cases. This makes a ratio of 1:6. Of the 210 cases, fifty-four were admittedly induced. Here is one fruitful field for antenatal care.

In this series of 210 abortions, there were thirty which were discharged as threatened abortions. Of these all except two were subsequently followed by our prenatal clinic, with the result that thirteen patients were delivered at term and fifteen aborted. Very few of these patients, not over 4 or 5 per cent., had received antenatal care prior to the development of symptoms of abortion. There was only one maternal death in this series of 210 abortions; it took place in a woman who was removed to a private hospital where she could receive more active treatment.

During this year there were forty-three stillbirths, a percentage to living births of about 4.4. Of these, twenty-two, or about one half of the infants, were delivered at term. Of the twenty-one premature stillbirths, ten or about half, occurred before the period of viability was reached.

Twelve patients died at a result of dystocia and complications of labor; some of these infants might have been saved had the patients received prenatal care and been hospitalized earlier. Complications of pregnancy caused five of these fetal deaths. Syphilis was responsible for six of the forty-two stillbirths. Other causes of fetal death were: fetal diseases and malformations, five; toxemias, two; miscellaneous factors and undetermined, thirteen. Only twelve of the forty-three patients, or 28 per cent., had any antenatal care.

There were sixty neonatal deaths; about eight of these patients, or 13 per cent., had some prenatal care. The causes of death were: prematurity, forty-one; hemorrhagic disease, seven; congenitally weak, diseased and deformed infants, six; miscellaneous and undetermined, six. No doubt, with proper antenatal care the incidence of prematurity could be somewhat reduced.

Maternal deaths in 1922 were only two, one from toxemia and the other from puerperal psychosis with epilepsy, the ratio to living births being about 2 per thousand.

In 1921 there were six maternal deaths, due to puerperal sepsis, three; ruptured uterus, one; tuberculosis, one, and placenta praevia, one. During this year there were about 800 living births, a ratio of about 7.5 per thousand living births.

An interesting phase of our prenatal work is the dental work done on our patients by Dr. D. E. Ziskin. We try to get all of our expectant mothers to go to the dental clinic for examination. About 200 patients who have been to this clinic have been delivered. In this group of 200 cases there have been two premature stillbirths and two stillbirths at term. This is a relatively low percentage of stillbirths. Three patients showed moderate hypertension; one had marked albuminuria with a premature stillbirth.

Bad oral conditions were found in many, with abscesses of 149 teeth; pyorrhea in forty-eight cases; roots, 234 times; gingivitis in fifty-one cases; strawberry red gums in ten cases, and cavities 666 times. The following procedures were carried out: prophylaxis in 111 cases; 586 fillings; teeth extracted, 457, and alveolectomies eight times. This shows that necessary dental work can be done not only without apparent harm to the pregnant woman, but seemingly with benefit.

VITAL STATISTICS AT MINNEAPOLIS AND ST. PAUL

We have also studied the vital statistics for Minneapolis and St. Paul for the last ten years, being indebted

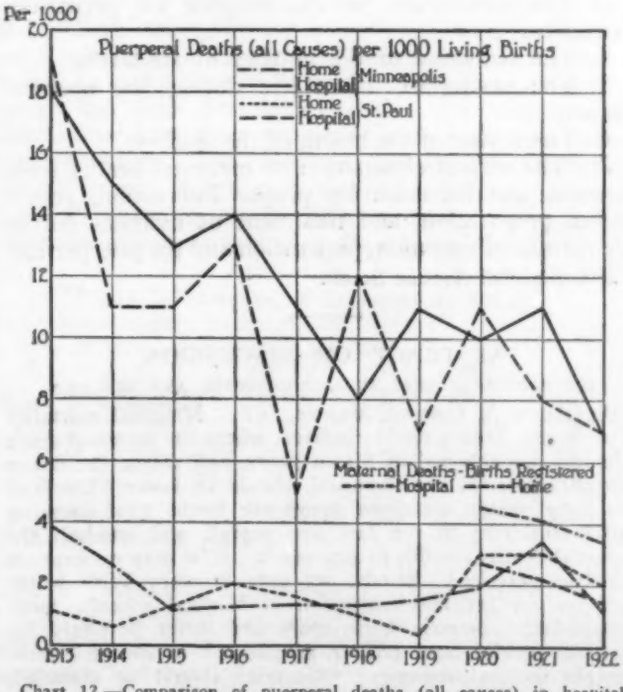

Chart 12.—Comparison of puerperal deaths (all causes) in hospitals and homes of St. Paul and Minneapolis; short curves show number of maternal deaths according to place of birth.

to Dr. F. E. Harrington of the Minneapolis Department of Health for the former statistics, and to Dr. A. J. Chesley of the Minnesota State Board of Health for the information regarding the latter city. The most striking feature is the almost identical percentage increase of the hospitalization of maternity cases in the two cities. There has naturally been a proportionate

decrease in the percentage of home deliveries. The present relationship between hospital and home deliveries is almost the reverse of that ten years ago. Naturally, the number of deliveries by physicians and midwives in the homes has decreased. In Minneapolis, the number of deliveries by midwives has both actually and relatively decreased. The number of deliveries by physicians in the homes has decreased, but has increased in relation to the percent of deliveries by midwives. The condition is the reverse in St. Paul.

During this period, the percentage of stillbirths and puerperal deaths in the hospitals has gradually decreased, though naturally remaining somewhat higher than in the homes, because of the fact that more patients with complications enter the hospital and because puerperal deaths and stillbirths are more completely and accurately returned from institutions.

The improvement in relation to stillbirths is greater than is apparent from the vital statistics, because we are now reporting to the department of vital statistics all births subsequent to the fifth month of gestation. Formerly, only those after the seventh month were reported. This increases not only the number of premature births, but also the number of stillbirths and neonatal deaths.

OBJECTS OF ANTENATAL CARE

We believe we have brought out some of the things to be accomplished by proper prenatal care and supervision:

1. The reduction of sterility by securing proper care for mothers, and the consequent reduction of infection.
2. The lessening of the number of abortions.
3. The diminution in the number of premature deliveries.
4. The reduction of the number of stillbirths.
5. The saving of infant life during the neonatal period.
6. The saving of the health of the mothers.
7. The virtual elimination of maternal deaths from toxemia and infection by proper instruction, supervision, preparation, and treatment of mothers during the periods of gestation, parturition and the puerperium.

2500 Blaisdell Avenue South.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RUDE, AND ADAIR AND MALAND

DR. HUGH A. COWING, Muncie, Ind.: Maternal mortality is too high. This is true in Indiana, where the maternal death rate has not changed in fifteen years, and where the infant mortality rate, 71 per thousand, should be lower. One-half our baby deaths are from premature births (not counting 10,094 stillbirths in the last five years), and one-half the maternal deaths are due to septicemia. How may we improve obstetric practice? Briefly, we may answer: With better facilities for bedside instruction in hospital schools, more postgraduate obstetric work, more and better hospitals for obstetric service, and greater prominence of obstetric subjects in medical societies. Obstetrics should be dignified. The public should be educated to appreciate the best in obstetric practice. A permanent personal record of every case should be kept. Strict asepsis is invaluable. Patience and wisdom are essential. Meddlesome midwifery contributes much to maternal mortality and morbidity. The obstetrician may be selected for service because of a pleasing personality or a neighborhood popularity rather than because of any special fitness for obstetrics. Sometimes he is overworked and without adequate assistance, and as a result his technic and his patient suffer. The great problem of motherhood cannot be solved by the physician alone. Maternity and infant care bring a responsibility not only to the family, but to the community and to the state. Prenatal, maternal and infant care should be adapted to the needs and conditions in the community. Dr. Schweitzer, our director of the division of infant and child hygiene, reports that the problem of the professional midwife is practically limited to the areas with foreign population. As to prenatal care, 97 per cent. of the mothers who brought children for examination at the division conferences had a physician attendant at birth. Mothers who had adequate rest before delivery had fewer complications and healthier babies. Fifty-four per cent. of the mothers had from two to nine months' prenatal supervision by a physician. Of 4,820 mothers, 86 per cent. report good recovery and 83 per cent. good health from two to five years after the birth of the child examined. Our report on obstetric care includes the mothers and babies brought to the conferences in four counties in Indiana in 1922. The report on 9,985 pregnancies indicates the need of better conditions, including better obstetrics. Stillbirths averaged one in thirty pregnancies, and miscarriages one in nine pregnancies. Our board, through our child hygiene division, is conducting a campaign of publicity and education, instructing mothers in baby health conferences, and also teaching public health nurses to become helpers and instructors, and establishing health centers where physicians and nurses give instruction in maternity and infant care, and encouraging local organizations to continue this work.

DR. G. C. MCPHEETERS, Fresno, Calif.: Every few years this problem of the midwife bobs up, and it is discussed more or less in a hopeless manner. A midwife, whether she is very bad or merely mediocre or whether she is passingly good, may be compared to the use of the lumbering stage coach of early days, which was used because there was no better means of transportation. Obviously, the midwife is being used because she is a makeshift and because we have in those districts no better means of maternal and postnatal care. As we provide better means, the midwife will gradually disappear, as the stage coach has disappeared from transportation in our country. The education of the medical profession, primarily, and then the education of the lay public in the appreciation of what constitutes maternal care is necessary. The education of the midwife alone will never accomplish this problem any more than the improvement of the old stage coach would improve transportation. The education must concern itself not only with the people of the present generation, but also with the education of young people in our schools and colleges. I would be in favor of this section's appointing a standing midwife committee which should classify and compile laws of the various states with regard to midwives. We might then recommend to those states that are still floundering in the sea of midwifery some standard laws to educate the profession and the public to the need of better obstetric care. I would be in favor of having a committee on sex instruction which could compile data to be furnished to those who are teaching sex subjects in our schools. The young people of our generation and of the coming generation should know what to expect in prenatal care, what to expect in the important problem of confinement, and what to expect about postnatal care. In my work in obstetrics, I have been able to control the nausea and vomiting of pregnancy in its early stages so that the vitality and strength of the mother is saved and so that the existence of severe nausea and vomiting and hyperemesis gravidarum may be prevented in many cases. I have instructed the mother so that she may preserve her figure and the contour of the body so that her health in later life is preserved. Enteroptosis is prevented. We have been able to control hyperthyroidism in some mothers, and I think I have been able to prevent the development of goiter. I have detected early hypothyroidism and prevented obesity. I have been able to teach our mothers more about the vital problem of breast feeding so that there is a higher than normal incidence of breast feeding.

DR. RUDOLPH W. HOLMES, Chicago: It seems to me a sad commentary on the practice of modern obstetrics that we have on one side the invaluable contribution of Drs. Adair and Maland, and a discussion of the midwife problem on the

other. About twenty years ago I headed a committee of the Chicago Medical Society to investigate the midwife. We, as a committee, believed that the midwife problem was a matter of economics, and a matter of education. Legislation does not improve the status of the midwife, unless it is accompanied by careful, conscientious supervision of accredited authority. Education of the public to something better in obstetrics will eliminate the midwife. At the same time, obstetric dispensaries must be created to care for the indigent obstetric woman. During the war, at the high period of affluence of the working people, the midwife cases diminished more than 25 per cent. With the recurrence of poverty after the war, the numbers of midwife cases increased greatly. In the last twenty years, the number of midwives in Chicago diminished from 400 to about 200. This is a natural reduction. With proper supervision of the midwives' work, there is not such a problem as we have believed. The director of infant welfare of New Jersey has shown that the maternal morbidity and mortality, as well as that for the baby, is less in the hands of the midwife than in the hands of the physician. Likewise, Nicholson showed that this was true in Pennsylvania—and is true because there is adequate supervision. We believe that the increasing death rates for the obstetric woman and her child are due to two causes. During the last ten years, too many of our assumed authorities have demanded that all women must have operative deliveries; that routine cesarean sections, forceps, versions and bag therapy spell greater success than spontaneous effort on the part of the woman. Their successes may be comparable to those in which watchful expectancy was the rule, but this teaching, going out to us, the rank and file of the profession, convinces us that this is the ultrascientific course to follow. Without a development of that skill which comes from an enormous clientele, without the facilities of a modern maternity clinic and all that goes with it, we blindly follow only to be led to disaster. The promulgation of an operative furor has greatly contributed to the present high maternal and fetal mortality. The second point is that since the influenza epidemics, infections during the puerperal state have increased. We see this in the greatly increased numbers of breast abscesses and general puerperal infections, for which increase, focal infections are largely responsible.

DR. HENRY PARKER NEWMAN, San Diego, Calif.: The issue of today is for the proper handling of obstetrics. Motherhood and childbearing should be a health-giving and not health-destroying or health-impairing function. But what is it? Sixty-five per cent., and more, is the morbidity of the child-bearing woman. We see it in our gynecologic work every day. A remedy has been suggested, largely the supervision of pregnancy, prenatal and post partum, covering the period in which we restore the individual mother as well as the child to normal health. I wish we could all take this home with us and emphasize the importance and carry out the instructions that have been given us today.

Malaria and the Railroads.—The Missiouri Pacific Railroad, the U. S. Public Health Service, and the state health officers of Arkansas and Louisiana cooperated in a malaria survey of the Missouri Pacific lines south of St. Louis to ascertain the effect of malaria on the operating cost and to make proper recommendations to the railroad for economical control of the disease. It was found that, during the last twenty-three years, the number of employees treated in the Employees' Hospital Association hospitals averaged more than 1,000. Injuries and surgical cases for the same period totaled only 75 per cent. of the number of admissions for malaria, which constituted 35 per cent. of all hospital admissions for malaria, and 45 per cent. of all sickness. In addition, more than 4,000 employees received outpatient treatment for malaria each year. Employees treated in hospital averaged nine days therein. The hospital malaria rate for employees working south of St. Louis was eight times higher than among employees west of that point. In 1920, when the personnel employed by the railroad was subnormal, the cost of hospital treatment for employees having malaria was more than $25,000, which was only a part of the actual loss to the railroad.

CAUSATIVE FACTORS AND TREATMENT OF CHRONIC EMPYEMA*

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If all the potential causes of delayed healing could be recognized and obviated during the acute stage, there should be no chronic empyema. It must be admitted that a cause of delayed healing may be very obscure, and that, even if recognized, it may be impossible to remove it. However, in most cases the cause is recognizable, and more can be accomplished in preventing chronic empyema by the removal of the cause of delayed healing during the acute stage than can be accomplished by the later cure. Intelligent and rational treatment of the chronic condition must be based on an understanding of the underlying cause. An inquiry into the causes of delayed healing is, therefore, pertinent to the consideration of both prevention and cure.

TABLE 1.—*Age of Patients and Duration of Empyema*

Age of Patients		Duration of Empyema	
Less than 5 years	11	From 3 to 5 months	78
From 6 to 10 years	11	6 to 12 months	92
11 to 15 years	15	13 to 24 months	51
16 to 20 years	43	2 to 3 years	24
21 to 30 years	115	3 to 5 years	20
31 to 40 years	70	5 to 10 years	16
41 to 50 years	29	10 to 15 years	7
51 to 60 years	10	15 to 20 years	4
61 to 70 years	6	More than 20 years	3
Total	310	Total	310

This paper is based on a study of 310 cases at the Mayo Clinic during the last five years. The age incidence and the duration of the empyema are given in Table 1. It will be noted that in 231 cases (74.5 per cent.) the cavity had been present more than six months; in ninety-four more than two years, and in thirteen more than ten years. The cases fall into three well defined clinical groups, latent or undrained empyema, delayed healing following early drainage, and persistent or recurrent empyema following drainage (Table 2).

TABLE 2.—*Duration of Empyema by Groups*

Time	Undrained or Unrecognized	Persistently Draining	Recurrent	Total
From 3 to 6 months	37	32	6	75
6 to 12 months	15	40	20	75
1 to 2 years	8	39	23	70
2 to 5 years	9	27	24	60
5 to 10 years	1	7	7	15
10 to 20 years	..	5	10	15
Total	70	150	90	310

LATENT OR UNDRAINED EMPYEMA

Seventy patients presented themselves for treatment without having had drainage. The length of time the empyema had been present, as determined by the clinical history, was about three months in twenty-one patients, from three to six months in sixteen, from six to twelve months in fifteen, from one to two years in eight, from two to five years in nine, and from five to

* From the Section on General and Thoracic Surgery, Mayo Clinic.
* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.
* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

ten years in one. The result of cultures from aspirated pus in thirty-four of these patients was pneumococcus in thirteen, pneumococcus and streptococcus in five, streptococcus in eight, and staphylococcus in three; cultures were sterile in five. In eighteen additional patients that came with persistently draining sinuses, and in seventeen with recurrent empyema, initial drainage had been delayed for from three months to three years, making in all 105, or more than 33 per cent. in whom delayed initial drainage was a factor in the production of chronicity. To this number are added the patients having two or more separate cavities, of which only one was rocognized and drained at the primary operation. The effect of such delayed drainage was a fibrous membrane over the pleura fixing the lung in a partially collapsed condition, perforation of the pus into the bronchi or through the chest wall, or both, and septic absorption manifested by emaciation, anemia, arthritis, osteo-arthropathy, nephritis, myocarditis and, in certain extreme types, structural deformity of the thorax (Fig. 1).

The most characteristic symptom was a chronic productive cough, which was present in all except three cases. Bronchial fistulas were present at the time of examination in 28.38 per cent. A considerable number of patients, without demonstrable fistula, raised purulent sputum in large amounts. The onset of symptoms was insidious, and in many instances the condition was diagnosed pulmonary tuberculosis. In others, if the onset of cough and sputum was abrupt, pulmonary abscess was diagnosed. Bronchiectasis, pertussis, arthritis and nephritis were among the diagnoses made. One patient was kept in bed for months because of tachycardia only.

In twenty cases exploratory aspiration was performed elsewhere, but pus was not obtained, in some instances apparently because the aspirating needle was not inserted to a depth sufficient to reach the cavity. In one such case, undrained for two years, the parietal pleura was 3 cm. in thickness. In many cases aspiration was performed in the usual area at the base, while the pus was encapsulated more anteriorly, in the paravertebral gutter, at the apex or, as in two cases, between the lung and the pericardium. Secondary unrecognized and undrained pockets were present in many cases.

DELAYED HEALING FOLLOWING EARLY DRAINAGE

The 150 patients in whom there was delayed healing following early drainage presented themselves with draining sinuses that had persisted since the first operation. The duration of drainage was from three to six months in thirty-two patients, from six to twelve months in forty, from one to two years in thirty-nine, from two to five years in twenty-seven, from five to ten years in seven, and from ten to twenty years in five.

In about half of the 150 cases, incomplete drainage was the obvious cause of delayed healing. The drainage was inefficient, owing to (1) partial healing of the drainage opening; (2) failure to secure dependent drainage; (3) inadequate draining of secondary pockets, and (4) incomplete irrigation drainage by the closed method.

Partial Healing of the Drainage Opening.—This condition represents by far the most common cause of failure to secure healing in cases of acute empyema treated by open drainage. Healing of a drainage opening in the soft tissues progresses more rapidly than obliteration of the cavity. The resulting narrow sinus fails to drain off all the pus, and chronicity results (Fig. 2). If a catheter is inserted into such a sinus, several hundred cubic centimeters of pus may often be aspirated. Repeated drainage operations may finally result in healing, or the cavity may persist indefinitely. Twenty-eight patients in this series had from two to seven such operations, and repeated transient healing of the sinus with spontaneous perforation occurred in many instances. One patient kept a sinus patent for seven years by the daily use of a hairpin.

PERSISTENT OR RECURRENT EMPYEMA FOLLOWING DRAINAGE

There were ninety cases in which there was complete healing of the drainage wound with later operation or spontaneous drainage. The period of healing is indicated in Table 3. Cultures from aspirated pus in twenty-one of these cases revealed the stapyhlococcus in eight, pneumococcus and streptococcus in two, staphylococcus and pneumococcus in three, pneumococcus in three, streptococcus in three, and diphtheroid bacillus in one; the culture was sterile in one case.

In most of the cases in which drainage had lasted less than a year, the cavity was doubtless persistent rather than recurrent; in some cases the cavity enlarged considerably after the drainage opening closed. In a few cases in which the drainage had lasted longer, the evidence also pointed to a persistent cavity. In one there was a persistent cavity with abundant sputum for four years; then spontaneous perforation of the chest wall was followed by cessation of cough and sputum. In another instance the patient could elicit a splashing sound from the thorax, and there was a steadily progressive thoracic deformity for fourteen years (Fig. 3). In most of the cases in which drainage had lasted more than two years, the evidence was fairly conclusive that there was true recurrence of infection, and reaccumulation of pus.

TABLE 3.—*Period of Healing in Seventy-Four Cases of Recurrent Empyema*

Time	First Period, Cases	Second Period, Cases	Third Period, Cases
Less than 8 weeks	25	18	2
From 8 to 12 weeks	9	1	1
3 to 6 months	15	8	1
6 to 12 months	5	11	2
1 to 2 years	6	2	1
2 to 5 years	4	3	..
5 to 10 years	5	..	..
10 to 17 years	5	1	..
Total	74	44	7

It may be noted that these patients were apparently in good health and working during intervals of from two to seventeen years, and also that the time of onset of recurrence was fairly definitely marked. In some cases the onset was characterized by symptoms of acute infection; in others it was of insidious onset, but steadily and rapidly progressive.

In one instance the patient was observed apparently at the onset of reinfection. The symptoms were those of an acute infection characterized chiefly by pain in the back, and along the costal margin. A diagnosis of acute cholecystitis was made. The first roentgenogram revealed slight pleural thickening, such as might be expected following healed empyema. The second roentgenogram, taken three days later, revealed a shadow characteristic of encapsulated empyema. Later, cough and sputum developed, and at operation a large bronchial fistula was found.

A basis for persistent infection in the thickened pleura is also found in the abscesses and cavities that were buried in the thickened pleurae in some of these cases (Fig. 4).

In twenty of the patients in the series, the cavities were not draining at the time of examination; forty-six patients had had two drainage operations; thirty-six had had spontaneous perforation of the chest wall; seventeen, repeated perforations. One patient's cavity had healed and drained at alternate periods of three weeks for five years; the wound remained healed for four years, draining meanwhile through a bronchial fistula. A spontaneous perforation then occurred; this closed, and two rib resections for drainage were performed. During the nine months before the patient presented herself for examination, there had been repeated spontaneous perforations in the scar.

Thirty-three of the patients had had bismuth paste injected; several were poisoned. In most instances the bismuth seemed to plug the drainage opening and promote healing of the sinus, but not of the cavity. There were cough and sputum, often foul and in large amounts. Fever, pain, dyspnea, edema, arthritis, club fingers, loss of weight, and weakness were among the symptoms and signs present in these cases.

The causes of delayed healing as observed in the 310 cases considered as a whole were (1) late drainage, (2) inefficient drainage, (3) persistent infection in the pleura, (4) bronchial fistulas, (5) tuberculous pleuritis, (6) foreign bodies, (7) massive collapse of the lung, and (8) fibrosis in the lung.

Fig. 1.—Unrecognized empyema undrained for eight years: Roentgenogram was taken in anteroposterior position.

Late Drainage.—As I have pointed out, late drainage was a factor in seventy in the first clinical group of cases of latent or undrained empyema, and in seventeen of the second group of cases, and in eighteen in the third group, so that in a total of 105 cases, late drainage may be said to have been a contributing cause to chronicity.

Inefficient Drainage.—In at least seventy-five of the 150 cases in the second clinical group, and in all of the cases in the third clinical group, in which the cavities were persistent, the drainage was inadequate in that it did not serve to keep the cavity empty of pus until it had become obliterated.

Persistent Infection in the Pleura.—This factor has been shown to play a part in many of the ninety cases in which there was persistent or recurrent infection, and doubtless in an unknown number of other cases; it will probably always be responsible for reinfection after chemical sterilization of a cavity.

Bronchial Fistula.—Such fistulas are more common as a cause of chronicity than is generally recognized. There were eighty cases (28.38 per cent.) in this series. Thirty-three (36.66 per cent.) occurred in the ninety recurrent cases (29 per cent. of the whole series), indicating that the fistulas are largely the result of lack of drainage. In seventeen, the fistula resulted from the perforation into the bronchus of an unrecognized empyema. The presence of small fistulas that would ordinarily escape notice has been demonstrated, particularly by the use of the sodium hypochlorite solution. Probably the eroding action of the fluid on superficially necrosed areas opens up terminal bronchi plugged by such material.

Bronchial fistulas are likely to become chronic, if the cavities are large, by preventing the inflating action of the increased intratracheal pressure during coughing, straining and so forth, and also by reinfecting the cavity. A sinus or cavity communicating with a bronchus may also become completely lined with epithelium by its proliferation from the mouth of the bronchus. I have seen small cavities that had persisted for years heal following simple cautery destruction of this lining endothelium.

Tuberculous Pleuritis.—Tuberculosis of the pleura is a common cause of delayed healing. A consideration of this condition is peculiarly fitting in a study of the causes of chronicity, because a great many cases are treated for years without being recognized as tuberculous, because of the frequently observed similarity to the purely pyogenic type, and because in a considerable proportion tuberculous cases fall into the nontuberculous group only because positive proof of tuberculosis is lacking. There are, furthermore, very good grounds for the belief that certain cases of nontuberculous empyema became tuberculous during the process of treatment. In a previous study I divided these cases into four groups: (1) tuberculous empyema proved by biopsy or the demonstration of the tuberculosis bacilli; (2) clinically tuberculous empyema; (3) empyema in patients having an active tuberculous focus, and (4) idiopathic empyema, or empyema in patients having a preceding idiopathic pleurisy with effusion.

There were twenty-nine (9.35 per cent.) positively proved cases of tuberculous pleurisy. Twenty-five were proved by microscopic examination of the excised pleura, two by demonstration of the tuberculosis bacilli in the exudate, and two by guinea-pig inoculation. There were eight cases with a definite clinical diagnosis of tuberculosis, sixteen of empyema with associated

active tuberculous lesions, and twenty-seven of idiopathic pleurisy with effusion, in which empyema later developed.

Repeated examination of the exudate from chronic empyema sinuses, and biopsy on excised pleural tissue will undoubtedly show a larger proportion of these cases to be tuberculous. In 1922, at the Mayo Clinic, 17.7 per cent. of the total number of cases were proved to be tuberculous, as against an average of 6.9 per cent. during the four preceding years.

Fig. 2.—Large empyema cavity of seven years' duration incompletely drained through a narrow sinus; marked thoracic deformity.

Foreign Bodies.—Foreign bodies were present in thirty-five cases. Bismuth paste mixed with infected pus was present in fourteen. Several of the patients had symptoms of bismuth poisoning. The fragments of necrosed ribs probably represent sequestration of stumps of the ribs left denuded of periosteum, and exposed to infection at the time of operation. Ribs should be resected well back, so that the stumps are covered by soft tissues; the ribs should not be denuded of periosteum beyond the portion resected. It is worthy of note that in two of the eight cases in which segments of rubber tubing were found in the cavity, the roentgen rays failed to show them. In one case, dermoid hair balls produced a shadow interpreted as tumor. Necropsy following death from the crisis of exophthalmic goiter revealed their true nature.

Massive Collapse of the Lung.—In a considerable number of cases, fixation of the lung, in a state of massive collapse, resulted in a huge cavity extending from the dome of the pleural cavity to the diaphragm. In several cases of undrained empyema, belonging to the first group, the lung had been compressed for months by from 1,000 to 2,000 c.c. of pus. In a few instances, traumatic pneumothorax was followed by empyema, and the lung, months later, lay collapsed against the hilum. In a number of cases, operative pneumothorax for foreign bodies, and in one case for freeing adhesions to secure therapeutic collapse of a tuberculous lung, led to this condition. By far the largest number, however, were due to open drainage following repeated aspiration for a pleurisy with serous effusion. Some of these cases required most extensive operations, including resection of the first rib, clavicle and scapula, and a plastic operation with the pectoral muscles to secure obliteration of the apical cavity. It must be emphasized that open drainage of a sterile effusion should not be instituted, and drainage of a massive infected effusion during the seropurulent stage should be accomplished by the closed method.

Fibrosis of the Lung.—It may probably be assumed that this condition is present in all cases of more or less complete long standing collapse of the lung; but I have observed fairly complete expansion of the lung following decortication after partial collapse of five years' duration. In another case, however, of only six months' duration, microscopic examination revealed a partially collapsed lung so completely fibrosed that reexpansion seemed entirely out of the question. Probably the type of resolution of a preceding pneumonia plays a very definite part in the production of this condition. Fibrosis of the lung prevents spontaneous healing of empyema, and prevents expansion following irrigation treatment or decortication.

TREATMENT

In considering the treatment of empyema, it must be emphasized that there is so much variability with regard to etiology, pathologic anatomy, and the general condition of the patient that no two cases are quite alike. Any single method of treatment, therefore, whatever its merits, will not be suited to all cases, and to apply a method universally means trying to adapt the patient to the treatment, rather than the treatment to the patient.

The guiding principles of treatment should be to secure healing by means that safeguard life, and so far as possible preserve function and structure. A complete cure is not the sole criterion of any given method; the cost at which the cure was obtained must also be taken into consideration. If a patient with chronic empyema can be cured by a reexpansion of the lung, then a destructive operation is an unjustifiable secrifice

Fig. 3.—Empyema of nineteen years' duration: late primary drainage; healing of primary drainage opening after eight months; persistence of cavity unrecognized for fifteen years; progressive thoracic deformity.

of structure and function, even though the operation is adequate, and the result a cure. Conservative methods should be given the benefit of doubt in the choice of operative procedure.

The treatment in the cases reported consisted of (1) preliminary aspiration; (2) simple open drainage; (3) irrigation with antiseptic solutions or saline solution, by the closed method, and by the open method; (4) decortication; (5) plastic operation, rib resection only, and rib resection and excision of parietal pleura with or without muscle or skin plastic; and (6) extrapleural thoracoplasty.

Preliminary Aspiration.—Preliminary aspiration is used as a confirmatory diagnostic procedure, and also in questionable cases to determine by culture whether or not the pus contains pyogenic organisms. If the pus is sterile and the case falls into one of the clinical groups of presumptive tuberculous empyema, open drainage should not be instituted. Open drainage in such cases is almost certain to lead to secondary infection, and the patient will be the worse for the treatment.

Simple Open Drainage.—Simple open drainage is the first indication in cases of cellulitis of the chest wall, osteomyelitis of the ribs, and for the removal of foreign bodies in cases clearly complicated by large bronchial fistulas, as evidenced by persistent cough with large amounts of sputum, or if it is found by actual test that the patient will not tolerate irrigation by the closed method. Irrigation with sodium hypochlorite solution may then be carried out in the presence even of large bronchial fistulas.

Irrigation with Antiseptic or Saline Solution.—Irrigation, preferably with antiseptic solution, is of great advantage in all cases in which the cavity is of considerable size, for the reason that (1) the patient's general condition greatly improves, (2) the cavity is usually diminished in capacity, often from 50 to 95 per cent., or it may be completely obliterated, and (3) the cavity is rendered practically sterile, in case later operation is required (Figs. 6 and 7).

In cases of tuberculous empyema with greatly thickened visceral and parietal pleura, the treatment is of marked benefit, but the parietal pleura may be thick without thickening of the visceral pleura. The solution must therefore be used with caution in any case of tuberculosis. If the roentgenogram does not reveal thickening of either visceral or parietal pleura, sodium hypochlorite solution is contraindicated, but saline solution or one of the nonirritating dye antiseptics may be used.

Whether irrigation is done by the closed method or following rib resection seems to be of little importance. The closed method is simpler, can be instituted at once in case there is an open sinus admitting a catheter, and this method insures complete contact of the solution with all parts of the cavity without effort, as contrasted with the difficulty of keeping a number of tubes in place in different portions of an open cavity. If the cavities are large, a negative tension produced by the use of blow bottles is maintained by the closed method. If exploration for secondary pockets or foreign bodies is desirable, the opening can be sutured.

Decortication.—Decortication is the operation of choice in cases in which irrigation fails, or in which there is a residual cavity of considerable size. If the cavity is small, under 100 c.c. capacity, it is questionable whether the amount of expansion of the lungs obtained is sufficient to warrant the operation. Usually cavities suitable for decortication decrease in size by the irrigation treatment to such an extent that decortication is no longer indicated, and if the cavity persists my experience has been that decortication will, as a rule, be only a partial success.

Plastic Operation.—This type of operation is indicated in cases in which the lung cannot be made to expand by the foregoing methods. Simple rib resection (Eslander operation) is the most conservative, and following antiseptic solution sterilization, results in a large proportion of cures. The convalescence is slower, however, and the danger of recurrence greater than if the parietal pleura is sacrificed. In cases of greatly thickened

Fig. 4.—Specimen of excised pleura from patient who had had five recurrences following complete healing of drainage opening; multiple abscesses embedded in the thickened pleura.

pleura, and in some cases in which there have been recurrences, the parietal pleura should be excised. In tuberculous cases, plastic operation following excision of the parietal pleura has yielded a higher percentage of cures, in my experience, than skin muscle operations. In other cases a muscle plastic operation following sterilization and excision of the parietal pleura and primary closure is the operation of choice. In some cases this operation may be combined to advantage with a visceral decortication. A 2 per cent. solution of gentian violet has proved of some value as a decorticating agent; at the same time it sterilizes the field preparatory to the plastic operation.

Extrapleural Plastic Operation.—In large sterile empyema cavities which do not become obliterated following simple aspiration, and in draining sinuses with secondary infection, an extrapleural rib resection in several stages offers a method of cure if patients cannot

withstand a more radical operation. Various combinations of the foregoing methods are often necessary in order to effect a cure on a conservative basis.

Local and nerve trunk anesthesia, with or without nitrous oxid and oxygen analgesia, is the anesthesia of choice.

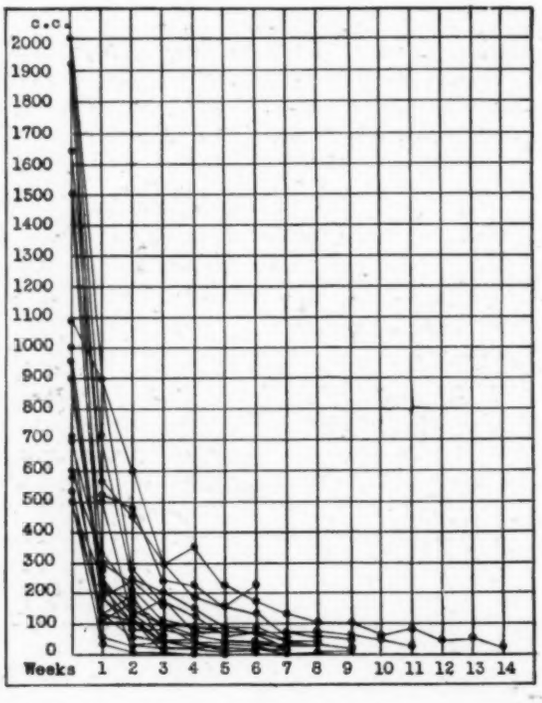

Fig. 5.—Progressive decrease in capacity of empyema cavity following irrigation with sodium hypochlorite solution; twenty-four cases, capacity of cavity from 500 to 2,000 c.c.

TREATMENT OF BRONCHIAL FISTULAS OPENING INTO EMPYEMA CAVITIES

Small fistulas, the presence of which is proved by the fact that the patient tastes the solution used for irrigation, or expectorates dye-stained solution, usually heal without special treatment. Irrigation, even with the highly irritating sodium hypochlorite solution, may still be possible, provided the cavity is not filled with the solution; but such treatment should be carried out with great caution. In many cases it was impossible to demonstrate such fistulas when open drainage was instituted. Large fistulas, as evidenced by intolerance to irrigation even with a bland solution, or by the evacuation by mouth of large amounts of pus, require open drainage. Irrigation with sodium hypochlorite solution may then be possible, and the fistulas will usually heal following chemical cauterization for the purpose of destroying the endothelial lining which is followed by granulation tissue formation. In case a plastic operation is performed for the obliteration of the empyema cavity, the bronchus may be closed by removing the thickened fibrous membrane surrounding the fistulas and suturing of the walls of the bronchus, or by a muscle or skin plastic operation.

Multiple fistulas, usually the result of perforation of a relatively small encapsulated empyema of long standing, and with extensive destruction of lung parenchyma, may be very difficult to heal. Conservative chemical cauterization is indicated in such cases, rather than an abrupt closure by a plastic operation, because of the tendency to the development of cerebral abscess.

In order to study the results from the various methods of treatment, the cases were grouped according to the method believed to have contributed most to the results, even though in many cases several different methods were used at different stages of the treatment. The principal operative procedures were aspiration and drainage in ninety-one cases, antiseptic solution treatment in ninety-nine, decortication in thirty-six, and plastic operations in eighty-four. The results of these various methods of treatment are indicated in Table 4.

TABLE 4.—*Summary of Results of Treatment of Three Hundred and Ten Cases*

Results	Aspiration and Drainage	Irrigation with Antiseptic Solution	Decortication	Plastic Operation	Total
Complete recovery	59	67	18	48	192
Marked improvement	7	9	8	10	34
No report	18	17	6	15	56
Too recent to classify	2	1	..	8	11
Hospital mortality	2	..	1	2	5
Deaths later from various causes	3	5	3	1	12
Results in the Eighty Cases Proved, or Suggestive of Tuberculous Pleuritis					
Complete recovery	8	9	2	14	33
Obliteration of cavity but persistent sinus	4	3	3	7	17
No report	7	7	2	6	22
Too recent to classify	..	..	..	4	4
Operative mortality	..	..	..	..	..
Died later from various causes	1	2	..	1	4

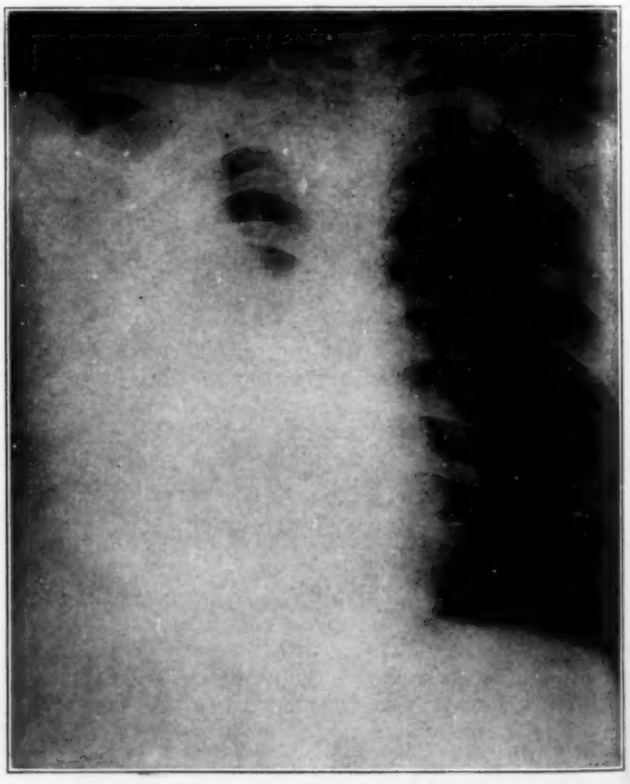

Fig. 6.—Empyema of three years' duration before treatment.

SUMMARY

In 310 consecutive cases of chronic empyema, the condition had been present more than three months in all, from six months to two years in 48 per cent., and from two years to more than twenty years in 22.6 per

cent. In 22.6 per cent. the cavities were from three months' to ten years' duration, unrecognized or undrained. In 50 per cent., sinuses had persisted since the drainage operation from three months to twenty years; 27 per cent. were recurrent, the condition having remained healed from eight weeks to fifteen years. In forty-four cases there had been two prolonged periods of healing, and in seven there had been three prolonged periods. Twelve patients were entirely free from symptoms during the healed periods, which varied from eight weeks to seventeen years. Thirty-six patients with recurrences had had spontaneous perforations in the wall of the chest; thirty-three had had bismuth paste injections, and several of these had marked bismuth poisoning.

Causative factors contributing to chronicity were late drainage in 105 cases (33.8 per cent.); insufficient drainage in at least 50 per cent., and persistent infection in the pleurae in an uncertain proportion of the ninety recurrent cases, and probably in some others. Bronchial fistulas were present in 28 per cent.; more than a third were found in the cases of recurrent empyema. Tuberculous pleuritis was a cause of chronicity in thirty-seven proved cases, and in an uncertain number of forty-four cases in which there was tuberculosis elsewhere, or in which empyema had developed on an idiopathic pleural effusion. Foreign bodies were present in thirty-five cases. Massive collapse of the lung and fibrosis of the lung were at least contributory causes in many cases.

Conservative treatment, securing healing by methods which safeguard life, and so far as possible preserve function and structure, is an obligation. Treatment should be adapted to the individual case, and based on the etiology, pathologic anatomy, and the patient's general condition. Exploratory aspiration and culture of the fluid withdrawn should be the rule in all cases suspected of being tuberculous, and a sterile effusion should not be subjected to open drainage, as a secondary infection is superimposed thereby. Only in the presence of cough with sputum suggesting an impending bronchial perforation should such cases be drained, and then preferably by the closed method.

TABLE 5.—*Operative Mortality*

Operation	Cause of Death	Comment
Rib resection for drainage	Cerebral thrombosis, bronchiectasis, pleurobronchial fistula, and general amyloidosis	No irrigation with antiseptic solution
Rib resection for drainage	Tuberculous empyema, bronchopneumonia, inanition	No irrigation with antiseptic solution
Plastic collapse..	Brain abscess, meningitis and pyocephalus	No irrigation with antiseptic solution
Plastic collapse..	Myocardial degeneration and cardiac failure	
Decortication, and rib spreading exposure	Acute epidemic streptococcal bronchopneumonia, and bilateral parenchymatous nephritis	

Irrigation with antiseptic solution recommends itself as a routine in the treatment of chronic empyema, because of the partial or complete obliteration of the cavity that results in a considerable proportion of cases, and because even if the cavity is not diminished in size, it prepares the patient and the operative field for whatever operation may be necessary. Most small bronchial fistulas may be irrigated by the closed method, if precautions are taken with regard to the position of the patient during irrigation, and if only a small amount is instilled at one time. Tuberculous cavities, without appreciable thickening of the pleurae, should not be irrigated with sodium hypochlorite. To be effective, irrigation must be sufficiently frequent to keep the cavity washed clean of pus, about every two hours during the day, and three or four times during the night. If

Fig. 7.—Cavity completely obliterated by use of irrigation with sodium hypochlorite solution.

the cavity is persistent, and of about 100 c.c. capacity, an attempt should be made to obtain expansion of the lung by surgical or chemical decortication, provided the case is not tuberculous, or of long duration. For the obliteration of cavities of several years' duration, a plastic collapse of the chest wall is indicated if the cavities are tuberculous, if there is associated pulmonary tuberculosis, or if decortication has failed. An extrapleural collapse is the most conservative, but a resection of the parietal pleura, combined with a muscle plastic operation, and a primary skin closure, is usually more effective.

Various combinations of methods of treatment were used. The principal operative procedures were drainage in ninety-one cases, irrigation with antiseptic solution in ninety-nine, decortication in thirty-six, and some type of plastic operation in eighty-four. In many cases it was necessary to perform extensive plastic operations, including resection of the first rib and clavicle, using the pectoral muscle to obliterate the apical portion of the cavity.

The results from treatment in the series, as a whole, were 226 patients completely cured, or so markedly improved that they were able to work. A late report has not been received concerning fifty-six, and reports of eleven are too recent to classify. One patient who was not operated on died from abscess of the brain. The operative mortality was five deaths, or 1.6 per cent.

THE TREATMENT OF BRONCHIAL FISTULAS *

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In the brief time allotted to each subject, it is impossible to summarize even superficially the important points in the treatment of bronchial fistulas, and I will therefore be compelled to omit the masterly discussions of others and confine myself to the observations based on thirty-five cases that have been transferred to my service for treatment and final disposition. These fistulas were encountered in a large series of chronic empyema cases varying in duration from two to seven years, and were all demonstrated by direct observation, as the many-stage open method of exposure was used in all cases. When I speak of chronic empyema, I refer especially to the surgical failures, many of which have had all forms of radical operations; and, regardless of these surgical measures, the empyema and bronchial fistulas persisted. In addition to the radical procedures previously mentioned, in some cases there was muscle implantation over the fistulas as well as attempts at inversion of these openings.

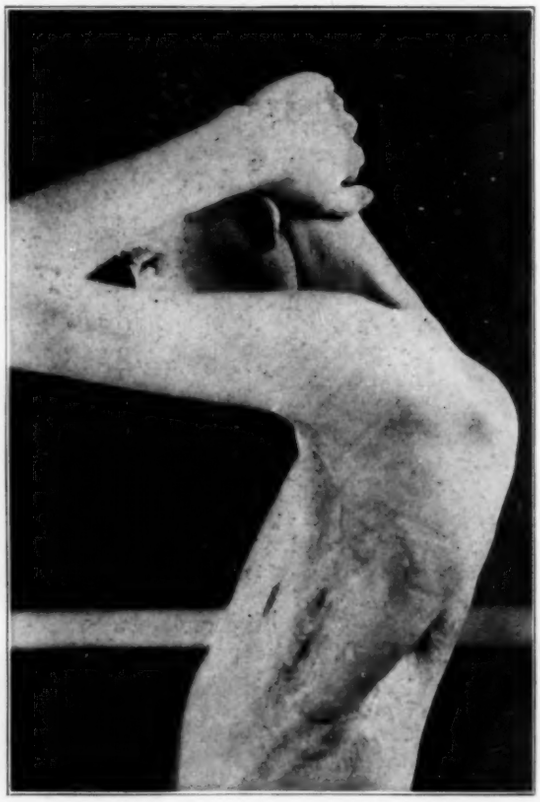


Fig. 1.—Incisions for former operations.

Of the thirty-five cases, 84.2 per cent. were due to intrapulmonary suppuration; 2.6 per cent. to extrapulmonary suppuration (subdiaphragmatic abscess), and 13.2 per cent. to external violence, such as gunshot wounds. Of the cases, 37.8 per cent. were multiple, and 62.2 per cent. were single. Of this series, 31.5 per cent. had tuberculosis as an underlying factor. Closure was effected in 36.9 per cent. by simple mobilization and sterilization; in 50 per cent. by mobilization and partial suture of the fistula, plus muscle implantation. Closure was effected in 10.5 per cent by mobilization plus muscle implantation without suture of the fistula; 2.6 per cent. were closed by inversion. Cauterization was used to close small multiple fistulas. Skin flaps were unsatisfactory, and no fistulas were completely closed by this method; 2.6 per cent. of the patients died.

While these figures are interesting, they apply mostly to the type of case that is not the most difficult to handle; but in this series are included a large number that did not respond to the methods so often advocated by writers who assert that practically all cases subside when the pulmonary and pleural infections have been controlled, and that those that are not closed by these methods can be inverted by purse string suture or closed by cauterization.

In one of my first cases in this series of bronchial fistulas, I followed the methods recommended by the recognized authorities, such as inversion and purse string suture. Before taking up the other cases, I want to mention one case which resulted in a fatality that was directly due to this method, which case was reported by me as a fatality in my recent article on the first forty cases of chronic empyema treated by the open many-stage method. This patient gave a history of a gunshot wound of the chest received in action, and later complicated by influenza and empyema, which was drained. He returned to the United States and had been healed two and a half years, but suffered with almost constant hemoptysis. He had been treated for tuberculosis in a sanatorium during that time. A roentgenogram showed an unobliterated cavity at the location of the old empyema and gunshot wound. In view of a previous experience, to be mentioned later, I explored the cavity and found it practically clean; three of the largest bronchial fistulas I have ever seen opened into a depression in the cavity, probably caused by part of one lobe of the lung having been shot away. I attempted to mobilize the largest of these fistulas with a view to inversion. In doing so, I encountered such a severe hemorrhage that I had to put in several sutures to control bleeding, which endangered the patient's life. The operation was immediately stopped, and the patient returned to the recovery room. During a coughing spell, he tore one of these ligatures loose and bled into this large cavity to such a degree that when the hemorrhage was later discovered, his condition was desperate, and he failed to respond to transfusion and other methods used to save his life.

In regard to the inversion method, there is only a small percentage of bronchial fistulas that can be inverted or that are large enough to be handled in this manner, but it is probable that such technic is satisfactory in some cases of lobectomy and other conditions when the fistula is not too close to the hilum. Such a procedure, however, is not indicated in the majority of bronchial fistulas found in chronic empyema.

What I wish to emphasize particularly is the treatment of those cases which have resisted such surgical measures as sterilization of the empyema cavity, mobilization, suture, cauterization, collapse with laying of muscle over fistula, and especially those fistulas in very inaccessible locations. Our most difficult problem has been the treatment of multiple fistulas in tuberculous cases in which radical operations have been performed for empyema and the patients were still carrying hemolytic streptococcal organisms in their sinuses when admitted, and especially when there are from five to ten fistulas scattered over the surface of the lung entering

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

into the formation of the cavities. In these cases I have endeavored to close the lesser fistulas first by cauterization, by mobilization and by purse string suture, which is reinforced by a muscle graft that is held under pressure. The use of this graft is based on experience gained in mobilization of the lung in cases in which persistent hemorrhage was encountered in locations not permitting the application of forceps without danger, and in cases in which it was necessary to apply a small section of muscle over the area to control bleeding, this procedure being after the method advocated by Cushing to control hemorrhage in brain cases. When the cavity was sterile, these grafts remained and were transformed into connective tissue, obliterating the fistula in a satisfactory manner; when sterilization was impossible, as is often the case, especially when the hemolytic streptococcus organism is present, the grafts were rapidly destroyed by bacterial invasion. The largest fistula is left open until all the lesser ones are occluded, and then it is closed by partial suture and muscle implant to avoid the dangers incident to immediate closure. The other method used was a pedunculated muscle flap, which was covered with skin except when it was temporarily attached over the fistula or fistulas by a few anchor sutures of silkworm gut which do not pass through any part of the pleura or living tissue. When this method is used, however, the individual fistula is not sutured; the wound is left wide open, dressed with 20 per cent. solution of protargin mild (argyrol), and gentian violet is later applied to promote healing if air escapes through the fistula temporarily. The skin-covered muscle flap, after being detached, can be applied in a similar manner to another area containing fistulas, if required (Figs. 1-6).

Fig. 2.—Removal of ribs bridging cavity; fistulas exposed.

When surgical solution of chlorinated soda (Dakin's solution) is not tolerated even when given with the patient in a sitting position, a 20 per cent. solution of protargin mild is substituted.

REPORT OF CASES

CASE 1.—E. B. D., aged 26, while in action, at Chateau Thierry, France, July 29, 1918, received multiple gunshot wounds (shrapnel) penetrating the left chest and abdomen. Empyema developed as a complication of the chest injury. August 8, thoracotomy was performed to establish drainage of the left pleural cavity. After the initial operation, he underwent multiple thoracotomies and thoracoplasties, with resection of portions of the fifth to the tenth rib, inclusive, in conjunction with decortication of pleura and attempts to close multiple fistulas.

The patient was admitted to the empyema service, Sept. 12, 1922, in a highly septic and anemic condition, considerably underweight, with a discharging sinus at the postaxillary line of the left chest, and showing marked deformity in the contour of the left lateral chest wall due to previous operations with extensive rib resection.

A roentgenogram revealed a large cavity and thickening of pleura in the lateral part of the left chest, with considerable regeneration of the previously resected rib structure.

September 29, the first operation in the fractional method of procedure in the treatment of empyema was performed. Following this, another portion of the cavity was opened up, and as the patient's general condition permitted, further surgery was done until the entire cavity was laid wide open. Two large bronchial fistulas situated along the spinal gutter, multiple small ones, and a collapsed lung tied down by adhesions were noted. Pathologic examination of the excised thickened pleura showed a tuberculous pleuritis. The cavity was constantly irrigated with surgical solution of chlorinated soda (Dakin's solution), but the hemolytic streptococcus persisted in the cavity for a long time. Complete mobilization or decortication was not attempted, as the patient was tuberculous.

March 19, 1923, the margins of the fistulas were freshened by removal of the visceral pleura around them; mattress sutures were placed in the pleura, across the tract, and a muscle graft was inserted beneath, and the sutures were tied. This method was not successful in closing the fistulas, probably because of the persistent infection; therefore the Dakin treatment was continued.

May 10, a muscle implant was made over the fistulas and ten days later detached from its origin, one-half inch of muscle being left attached to the lung surface over the fistulas. There was a leakage of air around the implant for several days, as the fistulas were not sutured; however, at the end of three weeks the fistulas were completely closed by granulation. The empyema cavity, muscle and skin were sutured, a small area being left at the lower aspect to fill in by granulation.

The patient is still in the hospital, awaiting granulation of a small area in the lower aspect of the wound, and he should be ready to return home in another month. The empyema and the fistulas are closed.

CASE 2.—G. F., aged 18, developed influenza followed by pneumonia in September, 1919. Following his convalescence, several months later, he noticed a loss of weight, anorexia and general malaise. He had had a second attack of pneumonia involving the bases of both lungs, the condition following this being diagnosed as lung abscess and later as an unresolved pneumonia, which diagnosis was again changed to empyema of the left chest. Aspiration was performed several times, and he received multiple thoracotomies and thoracoplasties, with resection of portions of the fifth to the ninth rib, inclusive, and excision of the thickened parietal pleura and attempts to close the multiple bronchial fistulas, without results.

The patient was received at this hospital and admitted to the empyema service, May 25, 1922, as an ambulatory case with marked anemia and loss of weight; he was extremely septic. Examination of the chest revealed marked disturbance of the contour of the left chest wall, owing to previous operations. In the seventh interspace of the postaxillary line there remained a small area unhealed, showing two bronchial fistulas and destruction of the lung tissue in the lower lobe of the left lung.

The patient had a persisent cough, with profuse expectoration, purulent in nature, having an extremely disagreeable odor. Culture from the cavity and the specimen of sputum taken at another hospital and also at the Walter Reed Hospital

proved that the empyema was of an unusual character and that the orgnism responsible for the condition was *Spirochaeta pertenuis*, or the organism of yaws. The Wassermann examination was negative, and culture from the cavity for mixed infection showed only an occasional staphylococcus colony.

May 26, the first operation was performed in the fractional method of procedure in the treatment of the empyema, and following this operation another portion of the cavity was opened up, a fraction at a time, as the patient's general condition warranted further surgery, until the entire cavity was laid wide open. There were noted seven bronchial fistulas, marked thickening of the parietal and remnants of the visceral pleura, with extensive destruction of the left lung, due to sloughing, leaving only the larger bronchi and degenerated lung tissue attached to the pericardium. There was some osteomyelitis of the previously resected rib stumps. The opened cavity was irrigated with surgical solution of chlorinated soda, protargin mild, weak solutions of tincture of iodin, potassium permanganate and all other recognized antiseptic and germicidal solutions without material change in the character of the infection. Every known method of closure of bronchial fistulas was tried on this patient without success. One fistula was treated at a time. The failure was in great part due to the persistent copious discharge.

The size of the fistulas was finally reduced by cauterization and the local application of gentian violet. Further rib resection at the upper aspect of the cavity was instituted at this time to mobilize the upper aspect of the lung around the five smaller fistulas, and permit their closure. A large muscle implant was placed over the upper five fistulas; the muscle and skin were closed, and constant pressure was applied by means of strapping the chest tightly over this area with adhesive plaster and a scultetus bandage. The attempt was successful; the five upper fistulas were closed and the muscle and skin healed by first intention, leaving the lower aspect of the cavity open, with two large bronchial fistulas patent.

These two fistulas were surrounded by a mass of scar tissue which was adherent to the pericardium and made mobilization out of the question; however, two attempts were tried at mobilization which resulted in such disordered heart action that the parts were immediately resutured. The upper of the two fistulas remaining was closed by a plastic flap, including the mammary gland, pectoral fascia and some of the pectoralis major muscle, this being only tissue available in this area. The flap was of sufficient size to extend over the lower fistula, but no attempt was made to close it, owing to the very free discharge and the presence of the spirillum, regardless of six months' treatment with arsphenamin and all forms of local reagents.

The lower and last fistula has finally closed by granulation, but there is no certainty as to the result being permanent, for the patient continues to expectorate large amounts of mucopurulent material; however, the upper five fistulas have been closed six months, and the cavity is completely obliterated.

All the fistulas are closed at present. The empyema cavity is obliterated. A small area of the skin is healing by granulation. The patient is still in the hospital.

CASE 3.—J. C., aged 27, developed influenza and pneumonia in September, 1918, complicated with empyema of the left pleural cavity. He had four radical operations prior to his admission to the empyema service, with a resection of portions of the fourth to the ninth rib, inclusive; decortication of the visceral and parietal pleurae, and a closure of the soft tissues over this area. Following these surgical procedures, his wound would repeatedly heal and break down, there being at the same time a persistent hemoptysis, which was particularly noticed about every third day. The patient was allowed to drift along with little or no treatment for over a year except the institution of drainage as indicated.

On his admission to the service, Feb. 10, 1921, he was anemic, poorly nourished and extremely toxic, having a sinus discharging pus, in the midaxillary line of the left chest, surrounded by a mass of scar tissue. There was marked deformity in the contour of the left lateral chest, with collapse of the chest wall due to previous extensive rib resection.

February 18, the area was laid wide open and a cavity of 150 c.c. capacity exposed, revealing a large bronchial fistula, a collapsed lung, and a rigid diaphragm, which had ascended, encroaching on the fibrous remains of the lung and thereby making further mobilization impossible. After the cavity had been sterilized, the fistula proper was reduced in size by a partial purse string suture; and a flap of degenerated muscle, principally scar tissue, was then sutured loosely over the site of the fistula, the cavity being left wide open. Following this operation there was a slight leakage of air through the fistula around the implant for six or seven days, but at

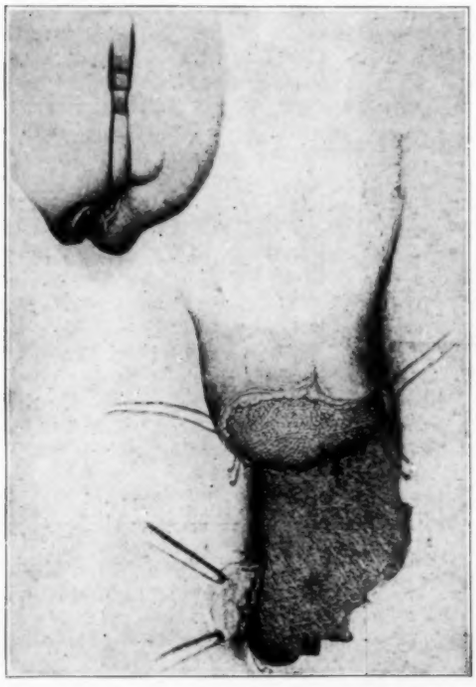


Fig. 3.—Decortication of area containing fistulas; muscle exposed and mattress sutures in place to fix muscle over fistula.

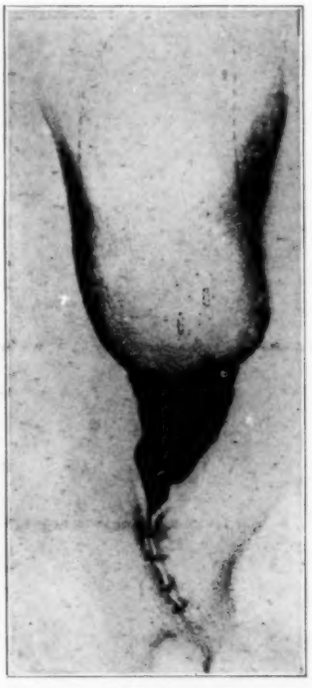


Fig. 4.—Muscle flap in place.

Fig. 5.—Muscle implant over fistulas divided; implant in position.

the expiration of two weeks the fistula was entirely obliterated. Then active irrigation with surgical solution of chlorinated soda was instituted, and after seven consecutive sterile cultures had been obtained, taken at daily intervals, the remaining cavity was closed with rubber tissue drainage.

This patient has been healed nearly two years, and there has been no recurrence of the fistula, empyema or hemoptysis.

CASE 4.—J. L., aged 33, developed an abdominal condition in December, 1921. He had received three operations prior to his admission to this hospital; two for gallbladder conditions and the third for a supposed liver abscess. On his admission to the service, Sept. 18, 1922, he was anemic, poorly nourished and extremely toxic, having two large sinuses discharging pus from the region of the gallbladder. The patient was taken to the dressing room. Surgical solution of chlorinated soda was introduced into the sinuses there, and immediately symptoms of gassing showed that he had a pulmonary condition. The tracts were later injected with bismuth and roentgenograms were taken, which showed the communications and the injected bronchi of the right lung.

One of the fistulas made its entrance through the diaphragmatic sulci of the anterior lateral aspect, while the other, which was posterior, entered through the vertebral sulci, communicating with a large subdiaphragmatic cavity of hour glass shape.

September 28, portions of the eighth, ninth and tenth ribs were resected, and thickened pleura and scar tissue along the course of the sinus tract were excised. The lung around the anterior fistula was mobilized, the posterior sinus tract was followed, throughout its course, the diaphragm being split close to its attachment. The lower lobe of the lung was immobilized at this point. The anterior fistula closed by granulation. The posterior sinus tract was left wide open, and irrigation with surgical solution of chlorinated soda was instituted. This area was left open, receiving constant irrigation, while the patient's general condition improved from day to day. During his interval he gained over 50 pounds (23 kg.). The patient received another operation in which the sinus tract was enlarged and another attempt was made to mobilize the posterior bronchial fistula, which was unsuccessful, the fistula remaining patent.

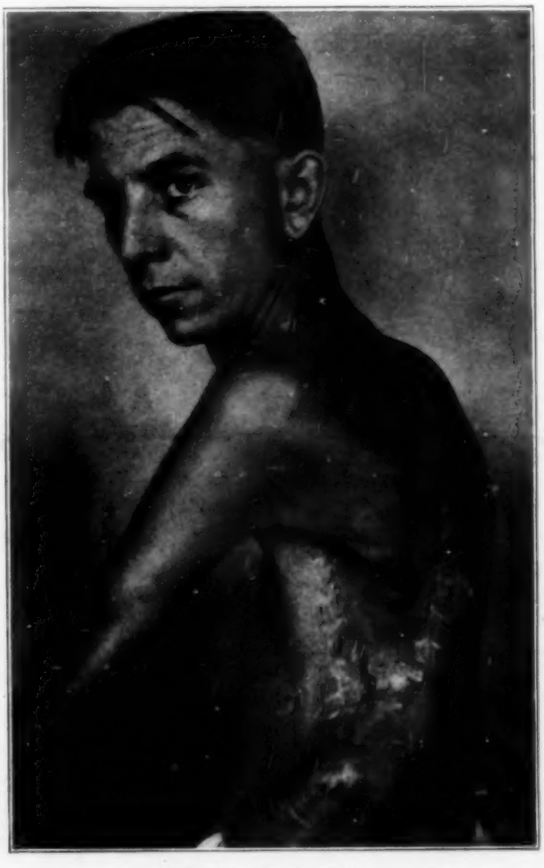


Fig. 6.—Final result.

Feb. 6, 1923, the area was exposed by freeing the superficial muscle bodies. The margin of the fistula was excised, with partial ligation by mattress sutures; a large, free, muscle graft, cut from the superficial musculature, was passed beneath the sutures and fixed by mattress sutures tied again over them. This graft was maintained in this position by constant pressure for two weeks. There was some superficial sloughing of the muscle, but the fistula was closed completely and the remaining aspect of the wound was allowed to close, healing by granulation. The area has remained closed for five months, and there have been no symptoms to indicate a patent fistula.

CASE 5.—J. R., aged 28, developed influenza in 1918. Convalescence was uneventful, without apparent complications. The patient remained in comparatively good health until May, 1921, when he was taken acutely ill, having chills, fever, night sweats, loss of appetite, loss of weight, persistent cough, and copious expectoration. He was seen by a number of physicians and treated for tuberculous pneumonia. Later, aspiration was performed several times, and following the aspiration he received multiple thoracotomies with resection of part of three ribs, in the midclavicular line, right chest.

He was admitted to the empyema service, Jan. 17, 1923, showing the characteristic changes seen in chronic empyema. There was marked clubbing of the fingers, with edema of the feet and ankles, and extensive decay of the teeth. He was anemic, septic and considerably underweight. There was elevation of temperature in the evening, with an occasional night sweat. Roentgenograms showed marked thickening of the pleura, right apex, from the first to the fifth rib, anterior aspect, and a cavity in this area partially filled with fluid.

Physical examination of the chest revealed some disturbance in the contour of the right, upper, anterior chest wall, due to previous operations. In the center of this area over the first interspace, anterior, right chest, there was a deep, narrow sinus, which extended to the posterior chest wall, passing over the receded apex of the lung. Injection of this sinus with surgical solution of chlorinated soda caused gassing of the patient, revealing the presence of pulmonary communications.

Jan. 29, 1923, a portion of the previously resected second and third ribs, in the outer clavicular line, was resected, and sequestrums were removed from beneath the first rib; the thickened parietal pleura was excised; inspection of the cavity revealed two large bronchial fistulas. The area was left wide open for the treatment of intrapulmonary infection. It was noted at this operation that there was considerable osteomyelitis of the previously resected ribs, and in addition there was extensive involvement of the third, fourth and fifth ribs, in the posterior scapular line; and as the greater part of the cavity was in the posterior aspect of the chest, it was deemed advisable to resect portions of the third, fourth, fifth and sixth ribs, in the posterior scapular line of the right chest, with the excision of the mass of thickened pleura and scar tissue compressing the apex of the lung, and in this manner mobilize the fistula. The operation was performed February 28. Owing to the fibrosed condition of the lung, mobilization of the fistulas was unsuccessful, and they remained patent following the second operation. The patient was put on active treatment with surgical solution of chlorinated soda, and with the through and through drainage, gassing by the solution did not occur if given while the patient was in the upright position. The resistant infection due to hemolytic streptococcus was controlled.

May 1, the anterior fistula was partially mobilized and closed by mattress sutures plus a pedunculated muscle flap. There was a leakage of air around the muscle implant for several days following this operation, but at the expiration of ten days the anterior fistula was entirely obliterated.

May 31, the margin of the posterior fistula was excised, and the surrounding area was curetted. A large muscle graft, 2 inches in length by 1 inch in thickness, was cut from the pectoralis major and placed over the fistula, and pressure was applied by means of dental compound and a silk marine sponge. Constant pressure was kept over the graft ten days. At the expiration of this time, the dental compound was removed and the silk marine sponge reapplied with a protargin mild dressing. The entire graft took; and, while there was some leakage of air for several days around the graft, the fistula was completely closed at the end of ten days.

This patient is still in the hospital. The anterior approach to the empyema cavity is healed as the result of the muscle implant over the anterior fistula, and of the large muscle graft placed in the anterior opening. The posterior approach is left wide open to be closed by granulation or a plastic operation at a later date.

CASE 6.—F. L., aged 24, while in action in the Argonne Forest, France, Sept. 29, 1918, received a wound by a machine gun bullet in the right chest, with a compound comminuted fracture of the sixth and seventh ribs, and a missile penetrating the right lung.

He was taken prisoner and developed empyema as a complication of his chest wound, both conditions being treated in German hospitals, while he was a prisoner of war, and when he was released the chest wound was healed. He returned to the United States, and was discharged from the service, March 11, 1919. He continued to expectorate a copious amount of mucopurulent material, streaked with blood; he had five severe hemorrhages and a persistent cough. He made a continuous pilgrimage from one hospital to another for three years. His condition was classified as tuberculosis, chronic bronchitis and psychoneurosis.

He was admitted to the empyema service, June 10, 1922, extremely nervous, considerably underweight, and having a persistent cough with a copious mucopurulent expectoration. Roentgen-ray examination revealed a greatly dilated bronchus with spicules of bone in its lumen, and also marked regeneration of the previously resected rib structure.

June 15, a portion of the previously resected sixth, seventh and eighth ribs, in the posterior scapular line of the right chest, was resected; the thickened parietal pleura was excised, and the visceral pleura decorticated. The entire area was left wide open to permit the bronchus to open at the point of least resistance, and on the fourth day after this operation the bronchus opened spontaneously, and six large spicules of bone were removed.

Fig. 1.—Appearance of wound, twelfth day after operation, after removal of most of the middle and part of the lower lobe for chronic pulmonary suppuration. Several bronchial fistulas are observed at the depth of the wound. The dotted line indicates the extent of removal with the cautery.

Following the removal of the sequestrums from the dilated bronchus, the entire area was left wide open to allow ample time to control the intrabronchial infection by irrigations with physiologic sodium chlorid solution and by packing the entire area and the opening into the bronchus with gauze saturated with 20 per cent. solution of protargin mild.

September 7, the margin of the fistula was excised, followed by a partial closure by suture with a muscle implantation over the suture line. The upper and lower aspects of the cavity, muscle and skin were closed with silkworm-gut suture, but that portion of the cavity around the fistula was left wide open and packed with a 20 per cent. protargin mild gauze dressing. Following this operation, air escaped through the fistula around the implant for several days, but the communication was completely closed by granulation within three weeks. The remaining aspect of the cavity around the site of the closed fistula was allowed to heal by granulation. The fistula has been closed over eighteen months; all of the symptoms have subsided, and there has been no evidence of a recurrence of the fistula.

PNEUMECTOMY WITH THE CAUTERY

A SAFER SUBSTITUTE FOR THE ORDINARY LOBECTOMY IN CASES OF CHRONIC SUPPURATION OF THE LUNG *

EVARTS A. GRAHAM, M.D.
ST. LOUIS

Chronic suppuration of the lung constitutes one of the most difficult conditions which occur in the whole realm of medicine to treat satisfactorily. An acute suppurative infection of the lung often becomes chronic, even when an abscess has been drained which has apparently been single. A lung from such a case will often show multiple abscesses, with one or more abscesses which do not connect with the main drainage track; indeed, it may contain so many abscesses that it gives the appearance of being "honeycombed" with pus. In most cases some of the bronchi will be dilated and their walls will be thickened. Their lumina will contain granulation tissue which bleeds easily. Fibrosis of the lung will be a more or less characteristic feature.

The various methods of artificial compression of the lung, such as pneumothorax and multiple rib resection, will usually not suffice to give relief. Additional drainage also will usually be of no avail because there is nothing which can be satisfactorily reached to give drainage. Theoretically, the only procedure which can be expected to give complete relief is the removal of the diseased tissue for the same reasons that chronically inflamed gallbladders and appendixes are removed.

The operation of lobectomy, however, is a very formidable procedure. In a recent article in which I reviewed the literature, I [1] showed that of forty-eight cases of lobectomy for bronchiectasis there were only eight complete successes (17 per cent.); and there was an actual operative mortality of 52 per cent. The principal danger associated with the operation is the infection which inevitably occurs. In order to take out the portion of lung which is diseased, it is necessary, first, to free all the adhesions present. This mobilization of the lung results in the exposure not

* From the Department of Surgery, Washington University Medical School.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Graham, E. A.: The Surgical Treatment of Bronchiectasis, Arch. Surg. 6: 321 (Jan.) 1923.

only of a large raw surface in the pleural cavity but usually also of the pericardium as well. It seemed to me that any procedure which would permit the removal of all the diseased tissue without the preliminary separation of adhesions to mobilize the lung would not only eliminate the chief danger of the usual operation, but also be just as effective from the standpoint of final results.

The operation amounts really to a lobectomy performed by the actual cautery. In the three cases in which I have performed it there has been no mortality and there has been no serious reaction to it. It may be performed in any number of desired stages, and all but the first stage may be accomplished without anesthesia of any kind. At the first stage, the field is exposed by turning up a flap of skin and muscle and removing portions of several ribs. The affected portion of the lung is then in view, covered by pleura, to which it is usually densely adherent. The first stage may then be terminated, if necessary. At a later stage, no anesthetic is required; or, if the patient is apprehensive, a little nitrous oxid and oxygen may be given. With a large soldering iron heated to a red heat, an excavation is then made into the lung tissue. If an old drainage track exists, it is well to begin the cauterization by plunging the hot iron into the sinus and to work out from that. New abscesses are sometimes found in this way, lying close to but not communicating with the main drainage track. The operation is not completed until all the diseased tissue has been removed by the cautery, but it may be performed in as many stages as desired. When the roentgen ray has indicated that only one lobe is involved, that is all the tissue that is removed; but when more than one lobe is involved, more tissue is cauterized. In one case I have removed nearly all of one lung. I can see no reason why bilateral chronic suppuration could not be handled in this way.

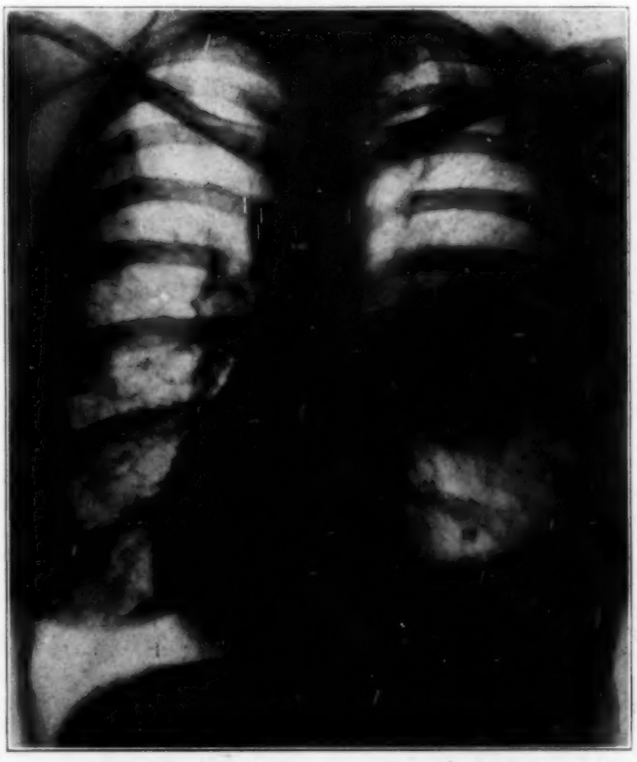


Fig. 2.—Appearance in same case before cauterization, showing the drainage tube leading up to the hilum.

When the operation is completed there is no specimen to exhibit, because the diseased portion has all been removed as charred fragments; and a large cavity is left, lined by an eschar, which sloughs away in about ten days.

One might suppose that, after the separation of the eschar, serious hemorrhage might occur from the large vessels. As yet, however, in three cases I have not encountered this complication. Theoretically, also, any hemorrhage which may occur should be easily controlled by packing because of the low blood pressure in the pulmonary artery, which amounts to only about 15 or 20 mm. of mercury, about one sixth of the systemic blood pressure.[2] In one case, a profuse hemorrhage occurred for a moment while one of the large branches of the pulmonary artery was being burned through at the hilum, because the artery was torn by a sudden cough of the patient as the cautery was burning its way through it. A little pressure with gauze for a few minutes, however, controlled the hemorrhage perfectly and there seemed to be no more difficulty in controlling it than in the case of hemorrhage from any large vein.

Perhaps the most remarkable feature of the operation is the absence of any severe postoperative reaction. The contrast with the stormy postoperative course following the ordinary lobectomy is most striking. In my cases the patients have not missed their ordinary meals even on the same days that the cauterization was performed, the postoperative temperature was not elevated more than 1 or 2 degrees Fahrenheit, there was no prostration, and the patients looked and acted as if they had not been subjected to any operative procedure. The cavity and the bronchial fistulas gradually obliterate themselves. The expectoration ceases almost immediately. The patients gain weight rapidly and their attitude of hopelessness changes to one of optimism. As an important aid in hastening the cleaning up of the cavity and the healing of the lung, we have employed heliotherapy, as advocated by Rollier[3] in cases of tuberculosis. Both Dr. Singer and I believe that it is of great value. The treatment is begun gradually by exposure of a small part of the body to the direct sunlight and is gradually increased until the wound itself is freely exposed to the direct action of the sunlight for a period of an hour or two a day. The combination of the sunlight and the ventilation is of great help in cleaning the wound of the anaerobic organisms of putrefaction which are likely to be present.

In the three cases in which the operation has been performed, one patient is entirely well except for a small, rapidly healing bronchial fistula, having gained about 20 pounds (9 kg.) and being now free of sputum and cough. Another patient was discharged healed with no cough or sputum; about six weeks after discharge she reported that she had an acute sore throat with fever and that her wound broke open again, and it has been impossible to learn anything more of her condition at present. The third patient has had nearly all of her right lung removed. The sputum has dimin-

2. Starling, E. H.: Human Physiology, Philadelphia, Lea and Febiger, 1912, p. 1053. Howell, W. H.: Text-Book of Physiology, Philadelphia, W. B. Saunders Company, 1920, p. 522. Macleod, J. J. R.: Physiology and Biochemistry in Modern Medicine, St. Louis, C. V. Mosby Company, 1919, p. 254.
3. Rollier, A.: Heliotherapy, Oxford Medical Publications, 1923.

ished in amount from more than 500 c.c. a day to about 20 c.c., her appetite has returned, and she is gaining in weight, although her wound is not yet healed.

A modest series of three cases is perhaps not very convincing as to the value of the procedure. Yet when one considers the very serious and almost hopeless condition of the patients and the marked improvement which has followed this relatively simple operation, I believe that a certain amount of optimism is justifiable in thinking that the pitiable sufferers from chronic lung abscess may be offered the possibility of hope of relief from their troubles by a relatively safe surgical procedure. There will doubtless be some mortalities in a larger series of cases, but any operation which will accomplish the removal of the diseased tissue at a risk less than the frightful one of the ordinary lobectomy should be a boon to the victims of an otherwise nearly hopeless condition.

It is possible that the operation may be applied in cases of acute lung abscess as well as to those of chronic suppuration. At present, however, I am so confident that relatively conservative measures will often be effective in acute lung abscess that I hesitate to use a method which implies an extensive removal of lung tissue in such cases.

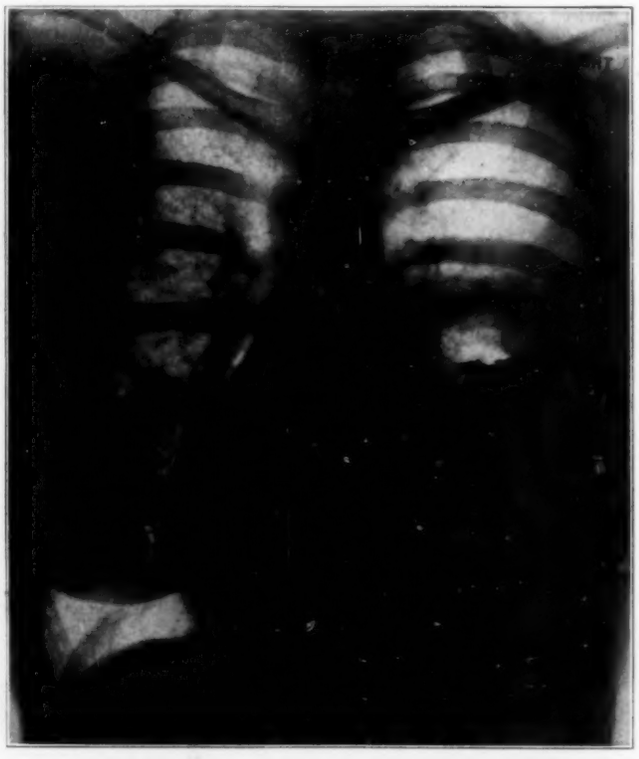


Fig. 3.—Same case, twelfth day after cauterization. A small rubber bag was placed in the cavity and then filled with barium sulphate to show the extent of removal of tissue. Actually, the amount of lung removed was greater than indicated in the roentgenogram, both because of some postoperative obliteration of the cavity and also because the bag did not entirely fill it.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HEDBLOM, KELLER AND GRAHAM

DR. LEO ELOESSER, San Francisco: To the collection of causes of chronicity mentioned by Dr. Hedblom I might add the pleural calcifications occurring in old people, whose empyema cavities are occasionally filled with loose, chalky concretions. Occasionally, too, the primary cause of empyema may be ordinary sepsis, streptococcic or staphylococcic, but these empyemas may become chronic through a secondary infection with tuberculosis; that is, a previously latent focus may break through into the pleura and infect the empyema cavity with tuberculosis secondarily. We have been struck by the presence of gas in certain acute closed empyemas without bronchial fistulas—usually fulminatingly virulent ones. We have been at a loss to explain it. We have thought that possibly the gas was produced by gas-producing streptococci. We can only hail Dr. Graham's operation with delight. Anything that reduces the danger of operation for bronchiectasis is worth having. There has always been a question in my mind as to drainage in empyema, whether we should drain and how long we should drain. It seemed to me that the method of Hippocrates of incising the thorax, letting the pus flow out and dispensing into a drainage tube altogether might be worthy of consideration. Dr. Graham's patient, whose lung he burned away with a thermocautery, will probably retain a bronchial fistula. I should like to ask him whether he intends to close that in the future or whether he intends to leave the patient with this open communication.

DR. CARL A. HEDBLOM, Rochester, Minn.: I have not observed gas in any case of chronic empyema except in association with a bronchial fistula. In some cases of acute empyema I have noted the presence of an air bubble, and the question might arise as to whether it was due to the presence of gas-forming bacilli or to a bronchial fistula. Multiple abscesses of the lung and suppurative pneumonitis in which there is a widespread infection of the parenchyma of the lung are conditions that tax one's resources to the utmost. Lobectomy is almost prohibitive in those cases because of the high mortality, and compression of the lung by extrapleural thoracoplasty does not yield as good results as it does in bronchiectasis. In the latter condition the results have been most gratifying, but in these cases of diffuse suppuration in the parenchyma, the methods Dr. Graham describes may prove of great service, provided hemorrhage does not prove to be too frequent or serious a complication.

DR. EVARTS A. GRAHAM, St. Louis: In regard to the question which Dr. Eloesser asked me about the closure of the bronchial fistula in the case in which nearly all the lung has been removed, I can only say that the case is not yet terminated. My practice is to be very slow in closing bronchial fistulas. I think there is too much tinkering done with them. I think that every bronchial fistula should be allowed months or years to give it a chance to close spontaneously. At best, a bronchial fistula is usually a safety valve for the lung. Serious complications sometimes ensue after premature closure, such as abscess of the brain. Another reason for not closing a bronchial fistula early is that many times, as Dr. Keller mentioned, they have opened spontaneously. The conditions behind a bronchial fistula are not at all similar to those behind a fecal fistula. The situation is entirely different.

Gas Masks.—The Department of the Interior has announced the development of a "universal gas mask" and of a "fireman's canister." With these gas masks, almost any type of gas or vapor may be met without much risk. The mask developed during the war gave protection against poisonous gases, vapors, and smokes encountered on the field of battle. After the war, when masks were advocated for use in the industries, the Bureau of Mines pointed out that army masks give no protection against ammonia gas or carbon monoxid. To combine in one canister the absorbents for all noxious gases is difficult because the absorbents for certain gases are most efficient when moist, whereas an absorbent for carbon monoxid must be perfectly dry. The "universal" gas mask contains granular absorbents, consisting of activated charcoal, for removing organic vapors; a filter of cotton wool for removing smokes, dusts and mists; caustic soda fused on pumice stone for removing acid gases; another cotton-wool filter; fused calcium chlorid for extracting water vapor that inhibits action of the next absorbent; "hopcalite," a mixture of oxids of manganese and copper with sometimes silver and cobalt that destroys carbon monoxid; and silica gel for absorbing ammonia. The complete mask and harness weigh about 8½ pounds, and the "fireman's canister" about 5½ pounds.

Clinical Notes, Suggestions, and New Instruments

MODIFICATION OF THE BOWLES STETHOSCOPE

J. BIRNEY GUTHRIE, M.D., NEW ORLEANS

I have used a stethoscope of the Bowles diaphragm type for nearly twenty years. In this time there have been foot pieces of various shapes offered by the makers of the instrument. Most of us are familiar with the instrument, which consists essentially of a hard rubber diaphragm held in a flat metal case which serves as a tambour for the stethoscope. This tambour is connected by a single flexible rubber tube to a metal Y-shaped connecting tube from which two flexible rubber tubes form a connection with the two tubular ends of the binaural ear piece (Fig. 1). There are three types of foot pieces in common use, the large circular, the small circular and the flatiron type. The latter type has been the one that I have preferred, chiefly because of its fitting with ease into the supraclavicular spaces in the auscultation of the apexes of the lungs. In addition to this, the flatiron terminal piece offers the advantage possessed by the other types in the way of localizing the points of maximum intensity of sounds as they are studied. In a large chest smoothly covered, there is some advantage as well as some saving of time in using the larger circular foot piece. When the chest is small and the surface uneven, the smaller circular type would perhaps be best. The flatiron type, in total area represented by the area of the hard rubber diaphragm, falls between the other two. One great advantage possessed by the large foot piece is that it collects and transmits a larger number of impulses, and thus makes audible some sounds which might otherwise be missed. It must be remembered that no intensification of sound is possible in any stethoscope without an electric amplifying device. The stethoscope produces no sound when properly used, and is merely a collecting device. It would seem that no argument would be necessary to determine that, within limits, the larger diaphragm would collect more impulses and transmit them as pressure waves to the stethoscope's binaural system. An actual comparison of the two proves this point.

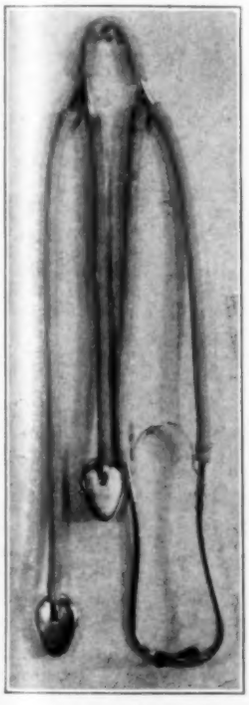


Fig. 1. — Modification of Bowles stethoscope.

The desirability of using as large a diaphragm as possible in some cases suggested to me the use of a double Y, one pointing upward and the other downward, with two foot pieces attached to the lower limbs of the lower Y. This was readily done by combining the binaural ear piece of one stethoscope with the proximal connecting tubes leading to the usual Y connecting tube. The lower limb of this is connected with another inverted Y, and this connects with the two foot pieces, by means of two flexible tubes. Another flexible connection of rubber tubing joins the stems of the two Y's, and the instrument is ready for use.

Figure 1 illustrates the stethoscope as described. All of the longer tubes are 12 inches in length, excepting one which is 2 inches longer, or 14 inches. The difference in length is to avoid breaking the diaphragms as the foot pieces strike together while the instrument is in use and when the metal covers of the foot pieces are removed.

Figure 2 shows the means of embracing the apex of the lung in an effort to get all the apical sounds possible.

Figure 3 shows how a rather large area of the lung can be auscultated by simultaneous use of the two foot pieces "in open order." This is an aid to speed in going over a chest. In the examination of the chest of a child, one foot piece may be placed in front of the chest and one posteriorly.

Fig. 2.—Means of embracing apex of lung in an effort to get all the apical sounds possible.

Figure 4 shows the method of use for studying the combined sounds of the heart at two clinical areas. The device has seemed particularly advantageous. To localize, one or the other of the foot pieces is raised off the chest, and the instrument has become for the moment the old familiar instrument. The simultaneous study of the sounds from the second right parasternal interspace and those at the third left costal cartilage seems of great value in listening for aortic diastolic heart murmurs.

Fig. 3.—Auscultation of large area of lung by simultaneous use of two foot pieces in "open order."

Other applications of the double foot piece will suggest themselves. Some will probably prefer the two foot pieces of the small circular type. The stethoscope as illustrated has been in use by me constantly during the last six months, and the device seems valuable. I have very recently seen a stethoscope designed for localizing and for comparison of the sounds of the fetal heart which is of the same practical construction excepting that there is no flexible connection of

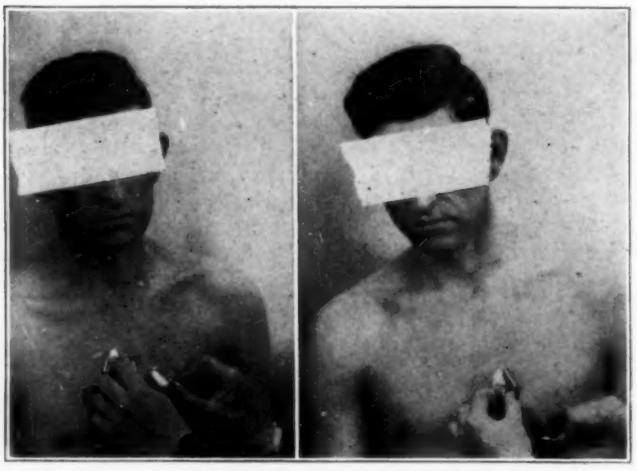


Fig. 4.—Method of use for studying combined sounds of heart at two clinical areas.

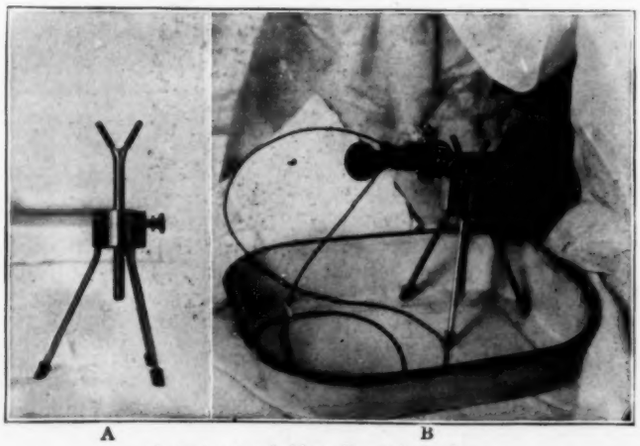
rubber between the two Y's. There is substituted a single four-way conjoining tube of metal, and the foot pieces are of the small circular type. I am convinced that the flexible connection is best because the instrument will fold up more easily. I prefer the flatiron type of foot piece because it can be better adapted to the apexes of the lungs. The combined area of the latter is also greater than that of the small circular type, and hence collects a greater volume of sound.

1206 Maison Blanche.

A CYSTOSCOPE HOLDER

CHARLES A. HILL, M.D., PITTSBURGH

Cystoscopy in the female, especially when the irrigation of the kidneys, the dilation of ureteral constrictions, injections in pyelography, or the study of urine specimens is undertaken, necessitates a technic that requires the services of a trained



A B

A, cystoscope holder: *B*, method of use.

assistant or nurse, and this fact limits the use of the cystoscope to one who is surrounded by such assistants.

There can be no doubt that many an enthusiast in this work is forced to disregard his desires, owing to the fact that cystoscopy and treatment of the female kidney and ureteral tract cannot be properly and successfully carried out without competent assistance.

With the technic that I employ, and with a trained assistant nurse, it is often found necessary for the assistant to hold the cystoscope under such conditions as during the changing of catheters, in irrigations, in pyelography when the cystoscope is not removed that the catheter may be reintroduced to drain the pelvis of the kidney, in changing gloves, and in examining urine before withdrawal of the catheter. This duty of the assistant seemed to be a lack of efficiency, and the thought occurred that an instrument to take the place of the assistant in these instances would be of decided advantage.

I, therefore, devised the instrument here illustrated, which seems to fulfil this purpose. The Surgical Equipment Corporation of Pittsburgh has constructed the instrument according to my design. It is made of metal, in tripod arrangement, with an adjustable upright forked rest for the cystoscope, which allows enough play to accommodate the difference in the size of the patient. The height of the instrument is 5 inches, with a 4 inch spread of the legs. It is all metal, nickle plated, and weighs about 1 pound.

I fully believe that this instrument will tend to increase the number of investigators in cystoscopy of the female, especially those who have been influenced by the inconveniences experienced when dependent on oneself in trying to adopt a satisfactory technic.

Jenkins Arcade.

GIANT MUCOCELE OF THE FRONTAL SINUS

CHARLES E. DOWMAN, M.D., ATLANTA, GA.
Assistant Professor of Surgery, in Charge of Neurologic Surgery, Emory University Medical School

This case of giant mucocele of the frontal sinus is reported because (1) the condition is sufficiently rare to justify the addition of another case to the literature on this subject;

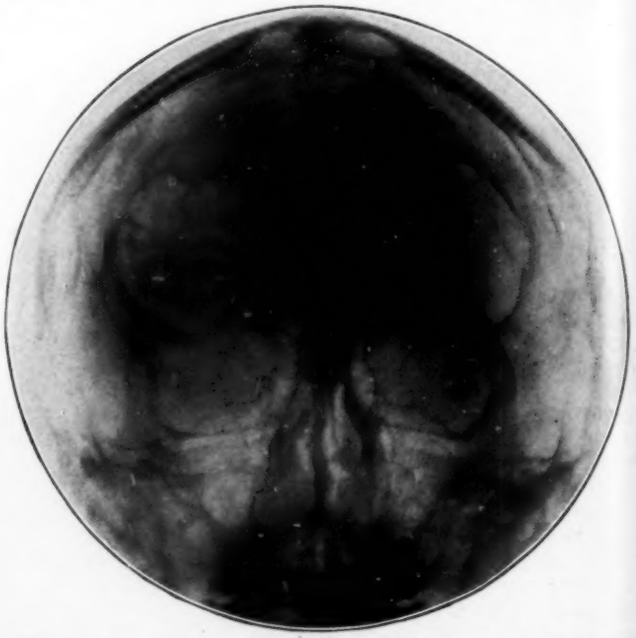


Fig. 1.—Anteroposterior view of tumor, showing extension downward and impingement on orbital structure.

(2) the secondary effect, through pressure on the orbital structures causing definite disturbance of vision and the possibility of further pressure effects on the cranial contents, calls for operative relief, and (3) the technical difficulties in bringing about a cure, on account of the necessity of obliterating a cavity of such great dimensions, present an interesting surgical problem.

Such an accumulation of nonpurulent mucoid material is probably brought about by some chronic irritation of the mucosa of an exceptionally developed sinus and the obliteration of the infundibular canal. The continued increase of

the mucoid material gradually causes the absorption of the bony walls of the sinus, with definite pressure effects on neighboring structures.[1]

REPORT OF CASE

P. S. E., an unmarried man, aged 25, first noticed a prominence of the right frontal region when 10 years of age. This remained practically stationary until 1910, when it began to increase rather rapidly in size, and continued to do so up until July, 1920, when I first saw him. In April, 1920, he

Fig. 2.—Postero-anterior view one year after operation.

began to have dimness of vision in the right eye. There was no history of trauma, sinus infection or other significant illnesses.

The examination revealed nothing of importance so far as the general condition was concerned. The blood was negative to the Wassermann test. In the region of the right frontal bone, including the supra-orbital ridge, there was a marked enlargement measuring 7 cm. transversely and 5 cm. vertically. Above, it gradually "faded off" into the remaining frontal bone. The plane of the right eye was fully 1.5 cm. in front of that of the left eye. The surface of the tumor was of bony hardness. The overlying skin was freely movable. The neurologic examination gave normal findings except for diminished vision of the right eye, engorgement of the right retinal veins, a displacement forward of the right eyeball, which seemed to be due to the pressure exerted from above by the tumor, absent bone conduction to watch-tick on the left, and air conduction to watch-tick for a distance of 2 cm., on the left.

Roentgen-ray examination of the skull, lateral view, showed the presence of a tumor 12 by 7 cm. in the right frontal region, evidently replacing the right frontal sinus. The shadow showed a decreased density, with numerous bony trabeculae. The anteroposterior view showed the tumor to be principally in the right frontal bone, but extending across the median line for a distance of 3 cm. It measured transversely 11 cm., and the greatest vertical measurement was 7 cm. The supra-orbital plate on the right side seemed to be absent, and the tumor seemed to encroach definitely on the orbital fossa (Fig. 1).

My preoperative impression was that the tumor was probably a mucoid cyst of the right frontal sinus. The right eye had already begun to be affected by pressure, and if the tumor was allowed further development, there might possibly result serious pressure on the frontal lobe of the brain.

1. A review of the various theories regarding the pathogenesis is given by Gange, A.: Giant Mucoceles of the Frontal Sinus, with Orbital Extension, Arch. d'opth. **39**: 193 (April) 1922.

Sept. 24, 1920, under local anesthesia with a 1 per cent. procain-epinephrin solution infiltration, an incision was made in the line of the right eyebrow, and from the outer angle of this, a second incision extended upward for a distance of 3.5 cm. By means of chisel, the underlying bone, which was very thin, was opened and a bone flap effected and broken back. When the bone was first opened with the chisel, thick, bluish, mucoid material spurted up in pulsations to a height of 3 cm., thereby revealing the pressure within the cyst. The bone flap was broken back, the cyst was thoroughly evacuated, and as far as was possible the thin lining membrane was removed. There was no posterior bony wall of the cyst, this being composed of the pulsating dura. Likewise, the supra-orbital plate was absent, the inferior wall of the cyst being composed of the soft, intra-orbital structures. No communication with the nasal cavity could be demonstrated. The cavity was now filled with 3 per cent. dichloramin-T in oil, the bone flap replaced, and the incision closed with interrupted fine catgut subcutaneous, and interrupted fine silk, sutures.

The patient left the hospital one week after the operation in excellent condition, the wound having healed by first intention. Oct. 14, 1920, he returned for observation. There was a purulent discharge from the outer angle of the wound, and considerable edema of the right frontal region. Three days before there had occurred suddenly a purulent discharge from the nose. He was admitted to the hospital, and the outer angle of the wound was opened and the cyst cavity packed with iodoform gauze. The following day the gauze was removed, and 5 per cent. dichloramin-T was instilled into the cavity. This was done daily until all infection had subsided.

Oct. 30, 1920, under 1 per cent. procain-epinephrin infiltration anesthesia, an incision was made in the line of the wound of the first operation, with a slight extension of the incision to the left and upward. The flap of scalp was then dissected from the bone, and all of the anterior bony wall, including the supra-orbital ridge and the right lateral bony wall of the cyst, was removed. The scalp flap was then replaced and sutured, with the exception of the extreme outer angle, through which a small iodoform gauze wick was inserted.

Fig. 3.—Appearance of patient one year after operation.

The iodoform gauze wick was removed two days after the operation, and daily instillations into the cavity of 5 per cent. dichloramin-T were instituted. Nov. 15, 1920, the patient was discharged. The wound was perfectly healed and all discharge had ceased. One year later the patient was examined. The sight in the right eye had returned to normal. There was very little deformity, and there was no discharge from the nose or from the area drained at operation (Figs. 2 and 3).

SUMMARY

In a case of giant mucocele, on account of the increased tension in the affected sinus, there had occurred absorption of the superior plate of the orbit and posterior bony wall of the enlarged sinus. The pressure on the orbital structures had caused a unilateral exophthalmos, with diminished vision in the affected eye. A cure was effected by removing the secreting mucosa and obliterating that part of the osseous shell preventing depressibility of the overlying integument. The result was fair from a cosmetic standpoint, and excellent as far as restoration of sight was concerned.

78 Forrest Avenue.

COMPLETE DOUBLE URETHRA IN A FEMALE

WALTER T. DANNREUTHER, M.D., NEW YORK
Associate Professor of Gynecology, New York Post-Graduate Medical School and Hospital

Urethral anomalies in the female are rare, and very few cases of double urethra have been recorded in medical literature. Urogenital malformations are usually congenital,

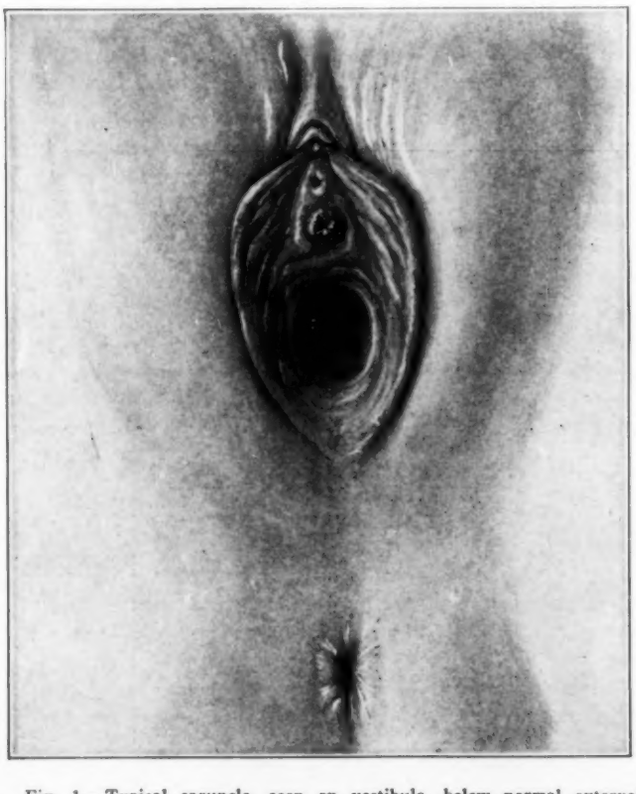


Fig. 1.—Typical caruncle, seen on vestibule, below normal external urinary meatus.

and are the result of imperfect, incomplete or abnormal development, but the etiologic factors concerned in their production are uncertain. Heredity, malnutrition and syphilis are possible but doubtful causes.

Mrs. K. H., aged 50, came under my observation recently. Her father and two brothers had died of tuberculosis, and her mother, of "liver abscess." The patient menstruated at 11, married at 16, and passed the menopause at 42. She lived a normal marital life, but never became pregnant. Continuous good health had been interrupted only by the ordinary diseases of childhood and the annoyances of constipation. The details of her previous history are irrelevant.

The patient complained of increased diurnal frequency of urination, nocturia, and a burning sensation on voiding. These symptoms had been present for about six months. At no time during the patient's life had she suffered from enuresis or incontinence.

General physical examination disclosed nothing of interest, except for a systolic murmur at the cardiac apex and a moderate degree of arterial hypertension. Aside from the malformation about to be described, the external genitalia and pelvic organs were all normal. When the labia were separated, a small red excrescence was discerned on the vestibule, just below the normal external urinary meatus (Fig. 1). It presented the appearance of a caruncle, and was exquisitely sensitive. A probe, pushed through a tiny slit in

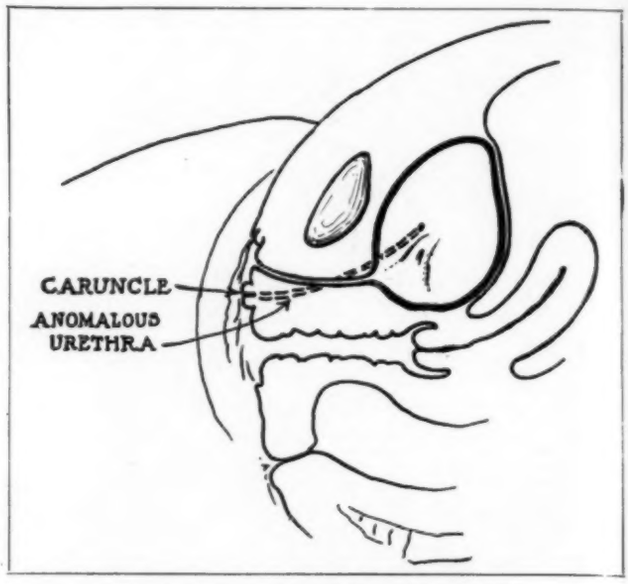


Fig. 2.—Course of second complete urethra.

its center, encountered little resistance, and traversed a path upward, backward and to the right (Fig. 2). When a cystoscope was introduced into the bladder, the probe was seen to emerge from a small aperture in the vesical wall, a little to the right and above the right ureteral orifice (Fig. 3). A ureteral catheter inserted through the anomalous channel withdrew urine from the bladder. Subsequent inspection through a small Kelly endoscope disclosed a mucous membrane lining. Removal of the caruncle uncovered a very

Fig. 3.—Cystoscopic view of probe entering bladder through aperture above and to the right of true ureteral orifice.

small vestibular opening, and promptly relieved the patient's symptoms. Further urologic exploration demonstrated a normal kidney and ureter on each side.

2020 Broadway.

Motion of Injured or Diseased Part Delays Recovery.—Uncontrolled movement of a diseased or injured part (if this is possible) will promote spread of the disease and delay recovery from the disability.—A. K. Krause: Rest and Other Things, p. 13.

A SAYRE'S FRACTURE DRESSING SUGGESTION

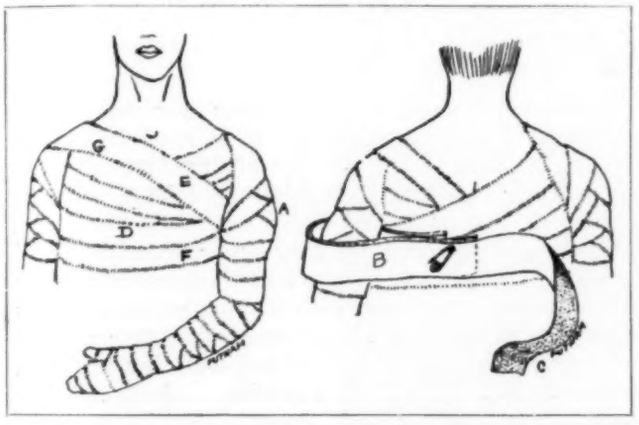
GLENN W. PUTNAM, M.D., AURORA, ILL.

I feel sure that most practitioners prefer Sayre's dressing for fractured clavicles. I feel equally sure that those who have used this form of dressing have found it unfeasible in a large number of cases, owing to sensitive skin which will not permit the continued application of an adhesive dressing, especially in the cases among children, and in those cases occurring in hot weather, in which the perspiration under the adhesive plaster often causes even severe skin erosions, in both instances in spite of careful cleansing of the skin and application of alcohol before the adhesive plaster is applied.

METHOD OF APPLYING DRESSING

An efficient form of dressing may be applied without the danger of skin lesions by following the instructions given below: Suppose we take, for example, a fracture of the left clavicle.

After the left arm has been padded at *A* with several turns of gauze, a bandage is applied to the left hand and arm to the axilla. A 2½ inch bandage is now applied to the lower part of the chest in circular turns until the axillae are reached; then a double spica is started with this bandage, finishing with a second of the same size, if required. This will cover



Method of applying bandage of adhesive plaster so as to avoid skin lesions.

the left arm and shoulder completely and anchor the chest bandages to the arms on both sides.

Next, a 2½ inch adhesive strip is taken and a double strip made by turning the end back onto the adhesive surface, long enough to reach round the left arm. The four layers are loosely pinned together with a heavy safety pin, as pictured at *B*. This pin may be removed in subsequent inspections if it is found necessary to tighten this part of the dressing. Then the left arm is drawn well back by making tension on this strip and is applied to the back around under the right arm and onto the middle of the chest at *D*. Then two strips of adhesive plaster are applied from *D* to *E* and from *D* to *F* to anchor it firmly. In the original Sayre dressing the adhesive strip was not brought only to *D* but was carried on round under the left arm and back onto itself in the median line of the back. This relieves part of the tension on the left arm and thereby defeats the desired result to a certain degree.

Now the left hand is placed at *G*, and the regular adhesive strip with the slit for the elbow is applied over the dorsum of the left forearm, over the elbow, up the dorsum of the left forearm, onto the hand and then on over the right shoulder and down to the adhesive strip described above. The bandages are well anchored to hold the adhesive strips, and the adhesive plaster does not touch the body at any point. One should be careful not to get the bandage on the left arm too tight about the elbow, as this may bring about discomfort and trouble.

Sylvandell Building.

Special Article

THE INFLUENCE OF HEREDITY ON THE OCCURRENCE OF CANCER*

H. GIDEON WELLS, M.D.
CHICAGO

Until recently it has not been possible to speak with assurance concerning the influence of heredity on the occurrence of cancer; the evidence at hand has been of such an unsatisfactory character that the validity of whatever conclusions were drawn was always open to question. Numerous attempts to secure information by studying general mortality statistics, hospital populations or isolated clinical observations have led to contradictory results, as they were bound to do from the inherent errors in the data obtained from such sources. Furthermore, until within a comparatively short time, we had no definite knowledge of the principles of heredity itself, and this ignorance foredoomed to futility any speculations on the subject.

It so happens that the year 1900 saw the rebirth of two unrelated discoveries which, together, have led to an entirely new outlook on the problem, for they placed for the first time on an experimental basis the investigation of both heredity and cancer. In this year, independently, three botanists (de Vries, Correns and Tschermak) reported the rediscovery of the fundamental principles of heredity which the Austrian monk Gregor Mendel had worked out so accurately and described in 1866.

The same year witnessed the work by Leo Loeb in Chicago and by Jensen in Copenhagen, demonstrating that sarcomas in rats and carcinomas in mice can be inoculated into other animals of the same species for an indefinite number of generations—Jensen's mouse carcinoma is still being transplanted in many laboratories. The same fact had been demonstrated in 1889 by Hanau, and in 1891 by Morau, but, like Mendel's discovery, its significance had not been appreciated at the time and it had not been followed up. Although we have since learned that the information to be obtained from transplanted tumors is limited, especially in respect to the influence of heredity, these observations placed cancer research on an experimental basis, and the recent rapid progress in our knowledge of cancer has been largely due to the stimulus to investigation given by tumor transplantation work.

During the twenty-two years that have passed since these rediscoveries were made, genetics has become one of the most active fields of biologic research. Experimental cancer research has likewise been one of the most attractive subjects of pathology, although perhaps somewhat obscured by the contemporaneous development of the more hopeful science of immunology. In view of the relatively short period covered by these investigations, and the difficulties inherent in the problems themselves, it is not surprising that we are only just now beginning to secure evidence concerning the relation of heredity to cancer. In the following paragraphs I shall endeavor to present, as

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concisely as possible, the evidence that we now have concerning the influence of heredity on the occurrence of cancer.

A. *EVIDENCE FURNISHED BY HUMAN PATHOLOGY*

Human material has furnished evidence that may be classified in two chief groups: (1) statistical investigations and (2) cancer families.

STATISTICAL EVIDENCE

Statistical evidence may be dismissed with the statement that, in the question of human cancer heredity, *all existing statistical evidence is valueless for any exact information on the subject,* and it must remain so until such time as we have necropsy records on all persons dying in several generations. When we consider how few persons have knowledge of a physician's diagnosis of the fatal illnesses of even their grandparents, to say nothing of their great uncles and aunts and of preceding generations, we at once recognize the limitations of clinical histories in casting light on the relation of human heredity to cancer. And even if we did have such records of clinical diagnosis we should be no better off, for the error in such diagnoses is far too large to permit us to use them.

We find that, even in large modern hospitals, necropsies show an error in clinical diagnosis in respect to cancer of anywhere from 20 to 50 per cent., depending on how large a proportion of the cases are of malignancy in the internal organs.[1] With such a great error in the diagnoses in large hospitals, where every modern diagnostic resource is available, what must the error be in the clinical diagnoses made on private patients under the varied and unfavorable conditions that often obtain even in present days, to say nothing of the diagnoses in previous generations before the days of microscopy or modern methods of diagnosis?

In considering the relationship of heredity to cancer, even a single error in diagnosis might totally destroy the value of an entire family history, making it appear that cancer was present in a branch of a family when it was not, or that it had failed to appear in a certain branch in which it actually did exist. Therefore, the records that exist now, or that may be obtained in the future, can be of no value whatsoever for this purpose until they all contain a complete postmortem examination with microscopic control.

With these essential facts before us, we must dismiss the numerous discussions in the literature based on mass statistics. By so doing we lose nothing, for the conclusions are as contradictory as possible. On the one hand we have the much-quoted and carefully compiled statistics of an expert statistician, Karl Pearson, using an absolutely worthless material, the histories of patients in a large charity hospital as to the incidence of cancer in their known relations. These failed to show any evidently greater proportion of cancerous relations in cancer patients than in patients with other diseases. Any medical man who has questioned the patients of such a hospital knows how absolutely worthless is the information that the patients can give in respect to family history. Most of them do not know how many and which of their relatives are living, to say nothing of the causes of death. Thus, in a discussion of the relation of heredity to cancer, Bashford [2] reports that in the histories of 2,932 cancer patients, in respect to familial occurrence of cancer, "no reliable statement was obtainable for 2,263." That is to say, in less than one fourth of the cases was there even a layman's knowledge of cancer in the family, although in the 4,526 parents there undoubtedly were not far from four or five hundred cases of cancer. To use refined statistical methods on such material is as useless as some of the attempts that are made to use the extremely exact methods of physical chemistry in interpretating biologic processes that even in controlled conditions show variations of 50 per cent.

It is only fair to Pearson to quote his own conclusion:

> The data do seem to justify further inquiry and to suggest to my mind that possibly the tendency to cancer does not run strongly in families. I admit that I should accept this only with reluctance, for general health, I find from my own investigations, is inherited exactly as any physical character like shape of the head, and length of life, is inherited also. It is difficult to conceive that longevity and general health can be inherited if the tendencies to particular diseases do not largely run in families. Cancer may be an exception, of course, and certainly the above results, without being convincing, do call upon us to pause and ask for further inquiry.

From this it is seen that Pearson was much more conservative in his deductions than most of the writers who have quoted his carefully analyzed statistics as weighty evidence that there is no hereditary influence in cancer.

On the other hand, we may find as many sets of statistics as we wish, which, like those of Williams,[3] show that a very considerable number of the relatives of cancer patients have had cancer; but they are not usually so controlled as to be of any value, even if such mass statistics could mean anything. About the only thing we can deduce from them is that most of the published statistics indicate that usually a larger proportion of the relatives of cancerous subjects have been cancerous than of the relatives of noncancerous patients. Few investigators, like Pearson, find the proportion of cancerous relatives the same in the two groups, and still fewer, if any, find more cancer among the relatives of the noncancerous subjects.

Of material of this sort, perhaps the best is that considered by Little.[4] This is contained in the family history records of the Eugenics Record Office of the Carnegie Institution, which have been furnished by persons of intelligence, conscientiously endeavoring to provide accurate family histories for scientific purposes. Analysis of these records shows that cancer occurs much more frequently among the descendants of cancerous parents, or in persons with cancerous relatives, than is to be expected from the general cancer mortality figures. However, we have here the usual defect in that the occurrence or absence of cancer is based on only the layman's belief concerning the cause of death of relatives, and the vital statistics used for comparison are of no more accuracy than any statistics not based on necropsy records, and probably give too low a cancer rate.

1. Wells, H. G.: Relation of Clinical to Necropsy Diagnosis in Cancer, and Value of Existing Cancer Statistics, J. A. M. A. **80**: 737 (March 17) 1923.

2. Bashford: Proc. Roy. Soc. Med. **2**, Part 1, p. 63, 1909.

3. Williams: Natural History of Cancer, New York, William Wood & Co., 1908, p. 367.

4. Little: Eugenics, Genetics and the Family, **1**: 186, 1923.

CANCER FAMILIES

Much attention has been given to the occurrence of families in which a strikingly large proportion of members are cancerous. The existence of such families cannot be denied. Some of these families have become classical in cancer literature. Such is the Bonaparte family; for Napoleon I, his father, his brother Lucien, and two of his sisters, Pauline and Caroline, all were believed to have died of cancer of the stomach. One of the most remarkable is the family of Madame Z, reported by Broca in 1866, and mentioned in virtually every discussion of heredity in cancer since that time. Many more such families might be described. The chief trouble with most of these reports is that they do not include all the noncancerous members of the family, and hence we cannot always be sure that the incidence is really so exceptional. Furthermore, they have, of course, the defect of depending only on family traditions and belief as to the cause of death.

In family records with a high incidence of cancer, no matter how high the proportion is, the possibility that the heaping up of cases in these families may depend on chance cannot be evaded. Granted that of the entire population past 40, about 10 per cent. will have cancer, the laws of probability would determine the occurrence of occasional families in which a high proportion of cancer cases would occur if heredity had no influence at all. Bashford [5] gives the accompanying table showing how large a number of cases of cancer are to be expected on this basis, independent of any other influence than that of chance.

Likewise, there should be fortunate families that escape cancer through pure chance. As far as I can learn, no one has sought families that show an immunity to cancer, although such family records should be more attractive than the other kind.

Occurrence of Cancer in Families, According to the Laws of Probability *

Number of Cancer Deaths in Family	Per Hundred Families of 6 Members, viz., 3 Men, 3 Women	Per Hundred Families of 8 Members, viz., 4 Men, 4 Women	Per Hundred Families of 10 Members, viz., 5 Men, 5 Women
None	51	41	33
One	36	39	39
Two	11	16	20
Three or more	2	4	8
	100	100	100

* Including only persons living thirty-five years or more.

5. Bashford: Proc. Roy. Soc., Med. Sec. 2: 67, 1909

But when we find families that have many cases of a certain sort of tumor which is not common, or a tendency to frequent location of a certain tumor in a certain place, the law of probability becomes inadequate. We have just such records.

Undoubtedly the retinal glioma families afford the most striking examples of such unquestionable heredity influence. Glioma of the retina is a rare neoplasm, which is striking in that it often occurs in infants or even at birth. Its familial occurrence is equally striking, and we have numerous records of such families as the following:

1. Newton [6] has reported a family of sixteen children, of which ten had died of retinal glioma, the disease being bilateral in seven cases. Two of the others died in infancy, and four were alive and well. Both parents were free from tumor, but a brother of the father was believed to have died of the same disease.

Fig. 1.—Familial glioma (Comas).

2. Wilson [7] reported a family in which eight children had retinal glioma.

3. Purtscher [8] has described a glioma family: A man who died of sarcoma of the arm had eleven children; two of six boys died of glioma of the retina (at 9 and 3 years); a daughter had bilateral glioma (verified by Fuchs), which retrogressed spontaneously. Her only child, a boy, died of glioma. Two children of the members of the family, who remained tumor free themselves, developed glioma; one died, and in the other the tumor retrogressed during ten years while under observation in the clinic of Fuchs.

4. Comas [9] has described a striking instance of familial glioma: Among eleven brothers and sisters, five have had glioma of the retina. Of the five, three sisters and two brothers, only one brother is alive; he is now 12 years old and enjoys good health, although blind. Both his eyes were enucleated, the left when he was 2 years old and the right six months afterward (Fig. 1). Recently, Dr. Comas writes me, the father has died from gastric cancer. The mother is in good health, and the other children, one of them 16 years old, are also in good health. The illustration (published with the permission of Dr. Comas) shows the mother, the blind brother, and one of the sisters who died shortly after this picture was taken.

It may be suggested, not without justification, that retinal glioma is not a typical and unquestionably

6. Newton: Australian M. Gaz., May, 1902, p. 236.
7. Wilson: Tr. Path. Soc. Dublin, 1871-1874, p. 138.
8. Purtscher, reported by Peller: Wien. klin. Wchnschr. 35: 121 (Feb. 9) 1922.
9. Comas, L.: Five Cases of Glioma of the Retina in One Family, J. A. M. A. 75: 1664 (Dec. 11) 1920.

malignant neoplasm, for it is often bilateral, does not commonly produce remote metastases, and may even retrogress spontaneously (witness one of Purtscher's cases). I therefore add some other examples of familial neoplasms.

Silcock [10] describes the following instance: A mother and daughter each suffered from melanosarcoma of the choroid of the left eye, each identified microscopically. The mother's father and each of her twin sisters had had an eye extirpated because of disease, but that this was melanosarcoma in all three cases is not known.

Williams [11] has collected a large number of family groups in which several members of the same family have died of similar or identical sorts of neoplasms, some of the instances being very striking, as are also the families described by Bashford,[12] Pel,[13] Peiser,[14] Watkins,[15] Richards,[16] and Oidtman.[17]

As especially significant may be cited the interesting cases reported by Burkard [18] of twin sisters, aged 21 years, who developed each a fibro-adenoma of the left breast, each of the same microscopic structure, at almost the same time and in the same part of the breast. This recalls the remarkable family described by Critzmann,[19] in which all members who were *not* twins died of cancer, all the twins escaping. Such an instances must be related to Galton's family, remarkable for the number of twins; whenever single children were born they always had six fingers and six toes, but the twins always had the normal number.

Another striking instance is reported by Hedinger [20] of primary liver cancer in two sisters examined at necropsy within one week. No cancer was known in the family, but Hedinger believes it impossible that two such rare tumors could have occurred in sisters without a familial organ disposition. Another case of rare tumor in sisters is reported by Primrose,[21] namely, primary "carcinoma" or cancroid of the appendix.

Some interesting data are given by Peller [22] from his analysis of a questionnaire sent out to the entire medical profession of Austria, from whom 389 replies were received; but here the factors of selected material and uncontrolled data make the significance of the reported material of uncertain value, for it is probable that observations in which many of the members of a family are cancerous are especially often recorded because they are especially striking.

Perhaps the most reliable family records of cancer in the literature are those reported by Warthin,[23] which have the virtue of being based on histologic examination in at least many of the cases, and in being collected in a university hospital population probably with better information as to family history than is likely to be the case in large city hospitals with a foreign-born clientele. He cites with diagrams several families in which a striking history of cancer was obtained. In one, of forty-eight descendants of a cancerous grandfather, seventeen had died or been operated on for cancer, and many of the survivors were below the usual cancer age when the paper was published. The preponderance of carcinoma of the uterus (ten cases) and of the stomach (seven cases) is striking. Another family, in which the father and mother escaped cancer although each had cancerous brothers and sisters, consisted of three, daughters, all of whom had uterine or ovarian tumors. Especially striking is a family in which a cancerous father and a cancerous mother had six children, all of whom died of cancer, as did the only grandchild; that is, of the entire family of nine members in three generations, all died of cancer, as did the paternal great grandfather.

Warthin [24] thus sums up his study:

> In the histories of cancer cases coming from the state of Michigan and examined at the pathological laboratory of the university, about 15 per cent. show a striking history of multiple family occurrence. When the difficulty of obtaining good histories is considered, this proportion is relatively high, and, on the whole, corresponds fairly closely with the percentage obtained by Williams. We must conclude, then, that a definite and marked susceptibility to carcinoma exists in certain families and family generations. This family tendency is usually most pronounced when there is a history of cancer in both paternal and maternal lines. In such families there is an especial tendency for carcinoma to appear at an earlier age than in the forebears, and in these younger individuals the cancer usually shows an increased malignancy.

Wolff,[25] in his great compilation of cancer literature, says that recent authors find that from 11 to 18 per cent. of their cancer cases show evidence of an hereditary influence. After discussing this evidence, he concludes:

> Nevertheless, we must admit that heredity may be a factor for predisposition to cancer, for it is admitted that heredity is seen in nevi, warts and other skin abnormalities which are known to be closely related to cancer formation; furthermore, heredity is understandable on the assumption that abnormalities in fetal development, which likewise are often the starting point of a cancer, may repeat themselves in several members of a family or of a generation.

He cites a report by Rüder, in which seven boys, from 5 months to 10 years of age, in one family exhibited epithelial "carcinoma" of the skin, in a form of papillary nodules up to bean size, while five girls of the same family showed none. The formation of these nodules was preceded by an inflammatory reaction where exposed to light. The course was slow, but nothing is said as to the outcome. The parents of these boys were healthy, but a grandfather had the same disease.

Those authors who consider that tumors arise usually or always in some embryonal rest of necessity lay much weight on heredity. Thus, Ribbert,[26] for instance, maintains that irritation cannot cause cancer unless there are already present the necessary germ cells, which, like all other anomalies of the germ plasma, are transmissible. He believes that ordinarily tumors develop spontaneously without exciting cause, solely because of the presence of anomalous predisposing

10. Silcock: Brit. M. J. **1**: 1079, 1892.
11. Williams: Natural History of Cancer, p. 356.
12. Bashford: Proc. Roy. Soc. Med. **2**: 71, 1909.
13. Pel: Berl. klin. Wchnschr. **52**: 288, 1915.
14. Peiser: Med. Klin. **11**: 193, 1915.
15. Watkins: Brit. M. J. **1**: 190, 1904.
16. Richards, C. M.: Am. J. Roentgenol. **8**: 514 (Sept.) 1921.
17. Oidtman: Nederl. Tijdschr. v. Geneesk. **1**: 2184, 1917.
18. Burkard: Deutsch. Ztschr. f. Chir. **169**: 166, 1922.
19. Critzmann, cited by Williams: Natural History of Cancer, p. 374.
20. Hedinger: Centralbl. f. allg. Path. **26**: 385, 1915.
21. Primrose, Alexander: Ann. Surg. **72**: 690 (Dec.) 1920.
22. Peller: Wien. klin. Wchnschr. **35**: 121, 1922.
23. Warthin, A. S.: Heredity with Reference to Carcinoma, Arch. Int. Med. **12**: 546 (Nov.) 1913.
24. Warthin, A. S.: J. Michigan State M. S., January, 1914.
25. Wolff: Die Krebskrankheit, Jena **2**: 695, 1911.
26. Ribbert: Deutsch. med. Wchnschr. **45**: 1265, 1919.

germ cells. This view can scarcely be held now in the light of the newer studies on the experimental production of cancer, unless we agree to the proposition that nearly all individuals have such anomalous germ cells located in any part of the body that we choose to irritate with our cancer-exciting agent.

The only study of heredity in human cancer in which the mendelian principles of heredity are considered is that of Levin,[27] who used material collected by field workers of the Eugenics Record Office at Cold Spring Harbor. Unfortunately, these field workers were not physicians, and the data that they collected must have been limited to what the members of the investigated families knew or believed concerning the ailments of their relatives and ancestors. There were two "fairly complete" and three "fragmentary" records available, from a study of which this conclusion is reached:

> The incidence of cancer in these families is not greater numerically than would be found among the population of the community as a whole. But there are several points in the analysis which indicate that cancer may be influenced by heredity. A cancerous fraternity usually shows in a previous generation a cancerous member either on the maternal or paternal side or both. In other words, a cancerous fraternity is usually derived from the union of two germ plasms, each of which is characterized by the presence of germ cells that are nonresitant to cancer.

It was also noted that there is a distinct family susceptibility of organs; in one family all the women with cancer had uterine involvement "except one in the omentum"; in another family group the males had intestinal cancer, the females breast cancer. Analysis of the collected statistics gave Levin evidence that *resistance to cancer is a dominant character,* the absence of which creates the susceptibility to cancer.

Benign tumors, and especially various cutaneous growths that are essentially benign neoplasms, often exhibit a striking and undeniable hereditary occurrence. Several such records of dermatologic heredity are collected by Meirowsky and Bruck.[28] Hereditary telangiectasis is also well known, the literature having been reviewed by Goldstein.[29] Multiple benign cystic epithelioma is one of the growths that has a distinctly familial distribution, and these growths,[30] which usually more or less resemble carcinoma histologically, sometimes become malignant. As illustrating the familial character of these growths may be cited the case reported by Heidingsfeld,[31] in a man of 65, whose four children, like himself, exhibited the growth on the nose; his maternal uncle and aunt had a similar growth, his mother had died at 30 without having any growths, and there had been no cases on the paternal side. Probably this is the type of growth referred to by Wolff as cutaneous epithelioma.

Another form of benign neoplasms with an extremely marked hereditary character are the multiple cartilaginous exostoses. The literature of this topic has recently been reviewed by Maynard and Scott,[32] who reported the occurrence of a family with sixteen known cases in three generations, an important feature being that the mother who transmitted the condition apparently did not herself have the disease. This has been observed in other families with this disease and is of much significance in respect to the mendelian principles of transmission of inheritable characters, as will be shown later.

Von Recklinghausen's disease, or multiple neurofibromatosis with its various related and complicating conditions, has a most striking hereditary character, at least one fifth of all patients showing close relatives with the same rare disease, which is especially significant in the fact that there is a noteworthy tendency to malignant transformation. The disease appears not only often in several members of a family, but also for many generations, its character being so striking that the lay patient is usually well aware of similar conditions in his relatives and ancestors. For example, Harbitz [33] has described a family in which the disease was known for five generations, it being of significance that in one generation it was transmitted by a woman who herself was not affected, although it was present in two of her sisters. The literature on this subject has been discussed especially by Langer [34] and by Herxheimer and Roth.[35] Davenport [36] found evidence, from an analysis of 243 cases, that the hereditary factor behaves as a dominant, coming down equally well in either male or female lines, and affecting the two sexes alike. Sometimes, however, there is a failure of dominance and generations are skipped.

Possibly of some relationship to these conditions is the central nervous sclerosis associated with multiple symmetrical adenoma sebaceum, as indicated by the family reported by Berg,[37] in which the father had tuberous cerebral sclerosis associated with adenoma sebaceum and a large, mixed, embryonal type of renal tumor; the daughter with the same nervous system disease and the sebaceous adenomas had a small angiofibroma of the kidney, and the paternal grandfather died with a large renal tumor but without the nervous and cutaneous lesions.[38] This disease is commonly associated with renal, cardiac and retinal [39] tumors, as well as various developmental defects, which facts bring closely together the potential relationship of inherited developmental anomalies and consequent hereditary neoplasms.

(To be continued)

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31. Heidingsfeld: J. Cutan. Dis. **26**: 18, 1908.
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35. Herxheimer and Roth: Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) **58**: 319, 1914.
36. Davenport: Proc. Nat. Acad. Sc. **4**: 213, 1918.
37. Berg: Ztschr. f. ges. Neurol. **19**: 528, 1913.
38. Hanser: Berl. klin. Wchnschr. **55**: 279, 1918.
39. Van der Hoeve: Arch. f. Ophth. **105**: 880, 1921.

The Physician.—There are men and classes of men who stand above the common herd, the soldier, the sailor, the shepherd not infrequently; the artist rarely; the physician almost as a rule. He is the flower of our civilization and, when the stage of man is done and only to be marveled at in history, he will be thought to have shared as little as any in the defects of the period and most nobly exhibited virtues of the race. Generosity he has, such as is possible to those that practice an art, never, to those who drive a trade. Discretion, tested by a hundred secrets, tact tried in a thousand embarrassments, and, what are more important, Herculean cheerfulness and courage.—Robert Louis Stevenson.

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SATURDAY, SEPTEMBER 22, 1923

IRON IN RELATION TO ANEMIA AND OTHER DISORDERS

There are types of anemias in which the origin of the disorder is so obvious that it calls for no unusual sagacity to manage the situation. Hemorrhages of all sorts are certain to lead to a "dilution" of the blood, for a time at least, provided the bleeding has been sufficiently extensive. Sometimes the hemorrhage is external and evident, while in other cases it is occult in character so that the escape of blood from the blood vessels is not betrayed so readily; but in either event the restoration of the circulation through regeneration of an adequate supply of corpuscles and hemoglobin is likely to go on uneventfully if no peculiar disease manifestations interfere with the normal progress of restitution. Hematogenesis is subject, however, to the same limitations that attach to all processes of growth. Formation of cells and tissues cannot exceed the supply of the essential component of the new structures. Protein manufacture in the body depends on the availability of certain amino-acids without which the albuminous substances cannot be synthesized in the organism of man. If the supply of one of these "building stones," such as tryptophan or lysin, is limited, a corresponding limit is placed on the genesis of new protein. The so-called "law of minimums" applies here as elsewhere in nature where constructive changes depend on the securing of certain requisite materials preformed.

The need of protein in blood regeneration is obvious; and since one blood protein, hemoglobin, is iron-bearing, this element becomes one of the limiting essentials in the process. As is the case with most of the inorganic constituents of the body, iron is needed in such comparatively small amounts that it attracts less attention than some of the substances that we are bound to consume by the ounce or pound in order to meet our weekly needs. Perhaps, therefore, the results of an unsuspected shortage are more elusive than is commonly appreciated. This is particularly true of the young, in whom bodily growth and development may proceed in a seemingly satisfactory way although careful examination may reveal an unmistakable anemia. Physiologists have been aware that animals living on diets supposed to be adequate, as judged by the somatic condition of the subjects, may nevertheless experience delay in the regeneration of blood after hemorrhage unless some suitable source of iron is provided. For example, in Scott's[1] recent investigations at the University of Cambridge, England, animals fed from the time of weaning on white bread and whole milk, and subjected to successive bleedings each amounting to 1 per cent. of the body weight, showed a fall in the color index of the blood which persisted for two or three weeks after the hemorrhages were stopped. Control animals fed during the same time on this diet plus green foods showed a comparatively inappreciable fall of color index. A seemingly small difference in the diet may thus become responsible for pronounced physiologic benefits under conditions of stress.

Even more subtle effects have been produced in the young bred from mothers that had long been on the bread-milk diets. The adolescents showed a marked fall in the color index of the corpuscle owing to the fact that the hemoglobin content of the blood had fallen, while the number of the erythrocytes had risen. Scott[2] believes that attention should be directed to such possibilities when the number of red cells does not directly betray their poverty in iron-bearing hemoglobin. Experimentally, green foods always facilitate recovery from this "latent diathesis" which manifests itself as anemia in the offspring. The importance of green vegetables thus becomes emphasized anew. In the adult, the possibility of deficiency is rarely threatening. In the young, in whom growth and change call for continuance of new supplies and for whom the range of the diet is usually far less liberal, the menace is somewhat greater. Even wholesome bread and milk may need a supplement.

Lately, attention has been directed to the possibility that deficiency of iron in the diet may lead to other disorders quite as detrimental as the long recognized anemia manifestation. Serious disease has been recognized in young pigs suckled by sows fed on food which, for various reasons, does not contain enough iron to keep pace with the growing demands of the sucklings.[3] The symptoms observed are not greatly unlike those seen in "wet" beriberi in human beings, a disease also often arising from the use of diets poor in iron. In the pig, iron therapy has been found advantageous for the relief of the conditions outlined. That milk itself may vary in its iron content in relation to the feed of the lactating animal has been clearly demonstrated for cows.[4] It may contain twice as much iron when they are on green pasture as when they subsist on the winter

1. Scott, J. M. D.: Studies in Anemia, I, Biochem. J. **17**: 157, 1923.
2. Scott, J. M. D.: Studies in Anemia, II, Biochem. J. **17**: 166, 1923.
3. McGowan, J. P., and Crichton, A.: On the Effect of Deficiency of Iron in the Diet of Pigs, Biochem. J. **17**: 204, 1923.
4. Hess, A. F.; Unger, L. J., and Supplee, C. G.: J. Biol. Chem. **45**: 229 (Dec.) 1920.

feeds. The newer stories of iodin, calcium and iron are beginning to emphasize the possible importance of the inorganic constituents of food in nutritional disorders.

BIRTH STATISTICS FOR 1921

Since the permanent census act was passed in 1902, the Bureau of the Census has made annual collections of mortality statistics from a steadily increasing area, which now contains 82.2 per cent. of the population of the United States. Until recently, however, few states maintained reliable birth registration systems. The first annual birth report was for 1915, and included ten states and the District of Columbia. The birth registration area now comprises twenty-seven states, which contain 65.3 per cent. of the population of the United States. The seventh annual report [1] on birth statistics published by the Bureau of the Census has just been received. It shows a birth rate of 24.3 per thousand population for 1921, as against a birth rate in 1920 of 23.7. There is a marked excess of births over deaths in every state in the registration area, as well as for nearly every city. Wherever deaths outnumber births, the excess is usually among the colored population. It is a notable fact that, almost invariably, the number of male births exceeds the number of females. This is true not only in the United States, but also, it appears, in England and Wales. There have been "hundreds of groundless theories" to explain this phenomenon. The recent figures for England and Wales, it is said, "give some color to the theories that war and epidemics are followed by increases in masculinity of live births." Knibbs [2] points out that "the one point which is clear is that death in utero (at least in the later stages) is marked by much greater masculinity than that which characterizes live births." The greatest masculinity (1,095) appears for children of mothers born in England, Scotland and Wales, and the lowest (1,030) for the negro. Italians also show a comparatively low masculinity. For stillbirths, masculinity is invariably much greater than for live births, and infant mortality among males is universally higher than among females in the early days of life.

A comparison of birth rates from 1917 to 1921 shows a gradual decrease for each year through 1919, when the birth rate was lowest. Comparing the rates for 1921 with those of 1917 for the states which composed the area in 1917, it is found that ten states show decreases and ten states and the District of Columbia show increases, the greatest decrease being for Connecticut (4.6) and the greatest increase for North Carolina (2.9). The birth rate of 23.5 for the rural part of the original registration area in 1921 is 1.2 lower than the rate for the rural part of the 1921 registration area (24.7), whereas the death rate (12.1) and infant mortality rate (79) for the rural part of the original registration area are, respectively, 0.9 and 5 higher than the corresponding rates (11.2 and 74) for the rural part of the 1921 registration area. These differences, it is said, in the death rates from the two areas are no doubt partly due to a difference in the population; 25 per cent. of the rural part of the original registration area is composed of places having from 2,500 to 10,000 inhabitants in 1920, while only 18 per cent. of the rural population of the present registration area reside in localities of that size.

In 1921, in Connecticut, for example, 56 per cent. of the white children born had foreign-born fathers; in New York, 49 per cent.; in New Jersey, 48 per cent. An interesting table is presented to show the racial composition of the coming generation in the registration area. It appears that in 1921, in only 67.1 per cent. of the births of white children were both parents born in the United States. In 6.2 per cent. of the white births, both parents were born in Italy.

The infant mortality rate is defined as the number of deaths of infants under 1 year of age per thousand born alive, and was 76 in 1921, as against 86 in 1920. Thus, for every thirteen infants born alive, one dies before the age of one year. The infant mortality rate for the rural population has declined since 1915 from 94.4 to 79.5, or, in round numbers, 15 per thousand births in six years. The infant mortality rate for the urban population has declined in the same time from 103.3 to 78.6, or 25 per thousand live births. The greater decline for the cities appears to be due almost entirely to a greater decrease in the rates from bronchopneumonia, diarrhea and enteritis.

1. Birth Statistics for the Birth Registration Area of the United States, 1921, Seventh Annual Report, Washington, D. C., Government Printing Office, 1923.
2. Census of the Commonwealth of Australia **1**, Appendix A, p. 141, 1911.

URIC ACID AND DERMATOSES

In his address as chairman of the Section on Dermatology and Syphilology at the San Francisco session, Haase [1] lamented the seeming lack of progress in the study of the etiology of dermatologic maladies. He alleged that the ability of the specialists in this field of medicine as nosologists has been gained at the expense of the more profound consideration of the causation of many obscure diseases of the skin; and he makes an earnest plea for more active cooperation between the dermatologist and the internist, biochemist and pathologist. Since these words were uttered, an illustration of what can be accomplished by enterprise of this sort has been published by Schamberg and Brown [2] of the Research Institute of Cutaneous Medicine, Philadelphia. It is not always easy, even for the most expert, to differentiate between a chronic dermatitis due to local irritants and an eczema of constitutional origin. For the latter, etiologic factors have been sought

1. Haase, Marcus: "Etiology Unknown," J. A. M. A. **81**: 703 (Sept. 1) 1923.
2. Schamberg, J. F., and Brown, H.: The Relationship of Excess of Uric Acid in the Blood to Eczema and Allied Dermatoses, Arch. Int. Med. **32**: 203 (Aug.) 1923.

and recognized in almost every possibility of physiologic malfunction.

The Philadelphia investigators have been impressed, like others, with the reputed association of gout and eczema. Instead of being discouraged, however, by the current (and not entirely unjustified) disrepute of attempts to put uric acid into the category of a source of human ills, Schamberg and Brown have endeavored to learn by direct chemical examination of patients rather than by empiric speculation whether or not there is a high incidence of hyperuricemia in any of the common dermatoses. Their survey reveals the fact that although there is, as might be expected, a great variation in the uric acid content of the blood of patients with cutaneous diseases, it is high in many patients with eczema and in some with pruritus, both general and local. Such hyperuricemia is in contrast with the lower average figures secured from patients with psoriasis, acne, urticaria and other dermatoses.

Although Schamberg and Brown believe that the hyperuricemia was etiologically related to eczema and pruritus in a considerable number of the persons studied by them, they are laudably reserved in their interpretation of the facts. It is not without significance that appropriate dietary measures affecting the purin metabolism have made many of the patients referred to more rapidly amenable to treatment than persons previously treated without this therapeutic measure. It is generally held that uric acid is one of the first nitrogenous waste products to be held back in cases of incipient renal incapacity. Retention of urea and nonprotein nitrogen follow more severe renal structural damage. Whether the alleged hyperuricemia of the cutaneous diseases already mentioned can be explained on the basis of renal dysfunction presents an interesting speculation in the light of the newest data. One way, at least, has been further opened to the possible elucidation of an important problem in dermatology.

Current Comment

THE NEWSPAPER AND THE PUBLIC HEALTH

In her recently published work, The Newspaper and the Historian, Lucy M. Salmon,[1] professor of history in Vassar College, has compiled a vast amount of material to indicate that the newspaper constitutes the most authentic record of the civilization of the period it covers. Repeatedly she makes clear the attitude of the press toward problems affecting the health of the people and the medical profession:

> The newspaper is intimately connected with all questions of public health and its effective aid in promoting it is everywhere recognized. "Printers' ink is saving more lives than any other single agency employed by modern health workers," was the statement made at the forty-third annual meeting of the American Public Health Association in 1915. "You may cure individuals of their ills in the privacy of a sickroom, but to cure the public of its ills you must get into the newspaper," sums up the question. The press reports health congresses, announces medical and surgical discoveries, publishes vital statistics, and hospital reports; it is coming to reject advertisements of patent medicines and of quack doctors; it carries on campaigns against flies, mosquitoes, rats, caterpillars, impure milk, contaminated drinking water, and exposure of food to dust; it opens a column for giving free advice on matters of health—"the health column in newspapers is as indispensable as the joke column"—and in every way it records the growing interest in all questions of private and public health. In its turn, the department of public health often takes the press into its confidence and thus secures its cooperation in the presentation and circulation of information bearing on the subject.

As Miss Salmon indicates, the public is beginning to look more and more to the newspaper as a source of general information; it is important that the information be trustworthy and that it be supplied through authoritative sources. Readers who have studied the health advice now offered to the American public through a variety of health columns and syndicated articles have, no doubt, observed that a considerable part of this advice is written with a view to its selling qualities rather than with any relation to its authenticity. However, it is not only the articles on single subjects that are colored; the news itself may be edited for ulterior motives. Of this Miss Salmon says:

> In the consideration of public health, the press is not so much divided against itself as it is divided with reference to the parts of the subject itself. The press has a free hand in some of its campaigns for public health—flies, rats, mosquitoes, and caterpillars are not commercialized, and campaigns against them are universally popular. But the press suffers a heavy handicap when it attempts to improve other conditions that militate against the health of the public. Efforts to secure pure milk may run counter to milk dealers and to the Grange; proposals to improve the water supply come into collision with the taxpayers; epidemics must not be reported because they reflect on the board of health and diminish out-of-town trade; news of the bubonic plague must be suppressed because its publication will interfere with travel; disgraceful living conditions in congested districts must be ignored because the tenement houses are the property of wealthy residents; the results of accidents must be minimized because they reflect on the railroads, or on important local manufacturing industries, or on the large department store; danger from fire in buildings where many persons are employed must not be dwelt upon because the owners are influential citizens; advertisements of patent cure-alls must not be rejected because they make widely known the home town where they are manufactured; a "clean-up-week" must not be urged because it is opposed by the board of public works; exposure of filthy conditions behind the scenes in restaurants will result in boycotting the restaurants; advocacy of free clinics may incur the displeasure of the medical profession; the premature announcement of discoveries in medicine or surgery may bring only ridicule on the paper overzealous to publish news.
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> In all matters pertaining to the public health as reported by the press, the inquiries of the historian must be specially directed toward discovering how far conditions that interfere with the good health of the public are commercialized and how far they are free from those outside influences that tend to limit the press in its discussion of them.

In her analysis, the author has indicated an important problem for the medical profession: how best to utilize the press for the progress of science and the teaching of health, and how to discount the commercial interests which are willing to use a great implement for what is essentially an immoral purpose.

1. Salmon, Lucy Maynard: The Newspaper and the Historian, Oxford University Press, 1923.

CANCER WEEK

In the space of two generations, the recorded mortality from cancer throughout the world has been trebled. As pointed out in our London letter last week, the British ministry of health has considered the problem so pressing as to appoint a special service to keep in touch with cancer investigation and to intensify studies along this line. In our own country, the campaign against cancer by all of the organizations interested in health, and particularly by the American Society for the Control of Cancer, has been conducted for some years. Each year has been marked by a cancer week in which special efforts were made to bring the matter prominently to the attention of the public and to disseminate information more widely. This year the organization has adopted a new policy, which will no doubt have the effect of prolonging the interest of the public and of increasing the efficiency of the preventive work. Instead of a single campaign throughout the country there will be six campaigns, each of a month's duration. Three weeks will be devoted to preparation, and the fourth to the carrying out of the campaign activities. The work will begin in the Northwestern section, October 15, and will proceed month by month through the Southwestern, Southeastern, Lake, Eastern and New England regions, terminating May 14. To this work the medical profession should lend its most active and earnest cooperation.

SO-CALLED PSEUDOCHYLOUS EFFUSIONS

Effusions that are milky in appearance have been described under a variety of names. The designations have been selected to indicate the supposed cause of the characteristic turbidity in each case. Thus, chylous ascites is referred to in contrast to "chyliform" or "pseudochylous" effusions, the latter being assumed to contain fluid which resembles chyle in appearance but does not contain fatty matter. The characteristic optical properties of the "pseudochylous" fluids has variously been attributed to proteins having unusual properties, and to lipoid-protein complexes of uncertain character. The complete absence of fat has never been affirmed, but there has been hesitation to believe that the very small quantities of fat sometimes reported could account for outspoken turbidity such as the milky ascitic fluids exhibit. Blankenhorn[1] of the Lakeside Hospital at Cleveland, who has made a careful chemical examination of characteristic "pseudochylous" specimens, found them to be essentially protein-poor blood serum made turbid by emulsified fat so finely divided that it had assumed properties common to colloids. On microscopic examination, some of the particles in suspension as a dispersoid were large enough to be recognized as definitely spherical; others were too small to be defined. The spherical forms were never larger than one-fourth the diameter of a red cell; most of them were smaller, but no one size seemed to predominate. The recognition of fat particles of such variable size in physiologic fluids deprives the expression "pseudochylous" of its intended significance. Consequently, Blankenhorn properly argues that it should now be abandoned as meaningless or, at any rate, misleading. Through the demonstration that emulsified or "homogenized" fat is the sole cause of milkiness in effusions, this type of turbidity gains a real diagnostic significance. It has been shown experimentally that so-called "pseudochylous" fluids can be made to develop from chyle in animals. Hence Blankenhorn[2] has concluded from his recent study of human material that the term "chylous" is accurate and general enough to designate all milky effusions save those that can be shown to originate from lipemic blood.

1. Blankenhorn, M. A.: The Causes of Turbidity in Milky Ascitic Fluids, Arch. Int. Med. **32**: 140 (July) 1923.

2. Blankenhorn, M. A.: Chylous and Pseudochylous Effusions, Arch. Int. Med. **32**: 129 (July) 1923.

THE EYESIGHT OF CHAUFFEURS

THE JOURNAL recently commented[3] on the necessity for defining some mental and physical standard for those who endeavor to drive motor vehicles on the public highways. The increasing mortality in this country from this cause is attracting attention throughout the world. To say that the increase is a logical matter, resulting from increasing population or a larger number of motor vehicles, does not extenuate the increasing loss of life, especially since it is clear that proper control would bring about an immediate cessation. Recently, in a case brought before a British court, it was discovered not only that the driver of a motor vehicle was intoxicated at the time the accident occurred, but also that he was possessed of but a single eye, the other eye being artificial. An amusing side to the case was the fact that the man who examined him after the accident did not detect the artificial eye but reported that the pupils in each eye were dilated. As the medical press points out: "In the case of the chauffeur everything is different: alert and perfect vision in both eyes is indispensable and should be made essential before a license is issued to a motor driver from the point of view of the public safety." The setting of a standard of vision and examination as to the ability of drivers to meet the standard by competent observers might well be the first step in a plan for controlling accidents so far as they are represented by deficiencies in the drivers of motor cars.

3. Safe Drivers, Current Comment, J. A. M. A. **81**: 835 (Sept. 8) 1923.

AN IMPROVED (?) ETHER

In 1921, Dr. H. E. G. Boyle of London read a paper before the Section on Miscellaneous Topics at the annual session of the American Medical Association. His paper dealt in part with a so-called improved ether —"Ethanesal." The claims made for the product were that it was a modified ether superior to ordinary ether. These were based on the theory that pure ether is less desirable as an anesthetic than ether which contains certain "impurities." In due time Dr. Boyle's paper was submitted for publication. It was returned on the ground that THE JOURNAL does not publish articles on new remedies until such products have been reported on favorably by the Council on Pharmacy and Chemistry. THE JOURNAL was criticized by a physician who was interested in an anesthesia journal,

for its refusal to publish the paper. "Ethanesal" was developed in England along the same lines as its Canadian prototype, "Cotton Process Ether." The usual chemical data regarding "Ethanesal" were given at the time, but not sufficient to remove it from the semisecret class of prorietaries. So much for ancient history. On another page of this issue the results of a painstaking investigation made by Dale, Hadfield and King in England are briefly given. The work of these and other investigators makes plain the fallacy of the claims of superiority made for "Ethanesal." Incidentally, the whole question of "cotton-process ether" and "Ethanesal" demonstrates again the advantage to our profession of a competent judicial body—the Council on Pharmacy and Chemistry—to investigate new additions to our materia medica. At the present time, Ethanesal is being advertised to the medical profession of Great Britain as an ether superior to that which has been standardized and is official in the pharmacopeias of both countries.

THE METABOLISM OF PREMATURITY

The difficulties involved in the care of prematurely born infants are familiar to all who have occasion to deal with such children. The application of external heat to maintain their body temperature calls for constant care and sometimes for considerable ingenuity. Sudden deaths during the early days after birth are by no means uncommon. In connection with the management of premature infants, experience has preceded science in determining the proper courses to pursue. Lately, however, considerable progress has been made in establishing the physiologic basis for their requirements. Talbot [1] and his collaborators at the Massachusetts General Hospital, who have collected the data most assiduously, have ascertained that in prematurity the heat production is very low when calculated on the basis of total production per day or per unit of body surface. They point out that, on the basis of the theory as to the relation of heat production to body surface, one would expect an output per unit of surface as in full-term infants; but the prematurely born produce less heat. It thus becomes clear why there is the necessity to give the premature baby much more protection against heat loss in its period of prematurity than at any other period of infancy. Talbot and his colleagues have found that the basal metabolism of the premature infant not only is lower than that of the full-term baby but also remains so for at least three months. Furthermore, even if the handicap of time is allowed, the premature infant produces less heat on his expected birth day than does the full-term infant during the first week of life. Muscular activity, which is almost synonymous in these cases with kicking and crying, affects the basal metabolism of the premature as it does in the normal infant. This may mean an increment of more than 40 per cent. But ordinarily the premature infant "belongs physiologically in the same class as the cold-blooded animal." It has not the strength to form heat by exercise; so that instead of crying or shivering as does the healthy full-term infant, the premature baby lies quiet, and the extra heat lost from the body is not replaced. These studies emphasize more than ever the need of careful temperature control for the prematurely born, not merely for days but usually during the early weeks of life.

1. Talbot, F. B.; Sisson, W. R.; Moriarity, M. E., and Dalrymple, A. J.: The Basal Metabolism of Prematurity, III, Metabolism Findings in Twenty-One Premature Infants, Am. J. Dis. Child. **26**: 29 (July) 1923.

THE TRANSMISSION OF TETANUS ANTITOXIN THROUGH THE PLACENTA

In a discussion of the functions of colostrum, in a recent issue of THE JOURNAL,[1] it was pointed out that the early postpartum mammary secretion is probably of less importance, from the standpoint of conferring certain types of immunity on the new-born, in the case of the human infant than in some other species, such as cattle. The reason for this may be found in the relative permeability of the placenta in different groups of animals. In cows, the barrier enveloping the fetus does not allow the transmission of immune substances through it, so that the colostrum becomes an important factor in conferring immunity on the offspring. The human placenta is comparatively simple in structure, and consequently far more permeable; at any rate, diphtheria antitoxin seems to penetrate it without noteworthy loss, so that the concentration of the protective substance is quite as large in the cord blood as in the maternal circulation, in human beings. Similarly, it has been found by Ten Broeck and Bauer,[2] at the Peking Union Medical College, that when tetanus antitoxin is present in the mother's blood serum it is also present in the cord blood of her new-born offspring. In the majority of cases the content in the two bloods was approximately the same, so that the human placenta must be readily permeable to this immune substance also. Aside from this biologic consideration, it is a matter of hygienic interest that children should be born with such protection in a region where there are many human carriers of tetanus bacilli. Since the colostrum doubtless also contains the tetanus antitoxin in the case of the mothers referred to, the infants may thus receive an additional supply of protective substance. Probably these are factors of importance in Peking, where approximately a third of the population are carriers of tetanus bacilli and where, notwithstanding, there is a comparatively low incidence of tetanus infections.

1. Human Colostrum, editorial, J. A. M. A. **81**: 662 (Aug. 25) 1923.
2. Ten Broeck, C., and Bauer, J. H.: The Transmission of Tetanus Antitoxin Through the Placenta, Proc. Soc. Exper. Biol. & Med. **20**: 399 (April) 1923.

The New York Cardiac Clinic.—The cardiac clinic as conducted in New York under the guidance of the Association for the Prevention and Relief of Heart Diseases is a mighty step in the right direction. Only two cities in our state outside of New York City have cardiac clinics. I should like to make a plea for the establishment broadcast of these clinics. There is ample material to keep such clinics very active, and the purpose for which they were originally planned might better succeed. Thus, much might be accomplished for the public, for the community and state, and for the furtherance of our studies in cardiac cases.—M. G. Levy, *New York State J. Med.* **23**:72 (Feb.) 1923.

Association News

CHICAGO SESSION

The Board of Trustees has selected May 19-23, 1924, as the dates for the Chicago Session of the American Medical Association. If for any reason it becomes necessary to change these dates, notice will be given in THE JOURNAL.

SECRETARIES' CONFERENCE

The regular annual Conference of Secretaries of Constituent State Medical Associations will be held at the headquarters of the American Medical Association, 535 North Dearborn Street, Chicago, Nov. 16 and 17, 1923. The presidents, presidents-elect and editors of state medical association journals have been invited to attend the conference. It is hoped that the secretary of every state medical association will be present. The program, now in process of preparation, will be mailed to all members of the conference as soon as it is completed.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—The trustees of the Los Angeles County Medical Association have been offered a lease for a period of forty-nine years on the county medical lot at Orange and Westlake, for $311,299.95.

DISTRICT OF COLUMBIA

Proposed Clinic for Arrested Persons.—A clinic where, in certain instances, persons arrested may be examined as to their physical and mental condition is advocated by Dr. William C. Fowler, health officer of the District of Columbia, who believes that such a clinic would be an invaluable aid to the courts. There are persons sentenced to penal institutions who should, instead, be sent to hospitals. Dr. Fowler said that "judges who are in doubt as to a prisoner's physical or mental condition might send the accused person to a clinic to be examined by specialists." He estimated that an initial appropriation of $15,000 would be needed to open the clinic, and said that the plan was generally endorsed in Washington. Dr. Fowler proposes to submit the plan to the general welfare organizations of the District, including the Board of Children's Guardians.

FLORIDA

New Veterans' Hospital.—The two general medical wards of the U. S. Veterans' Bureau Hospital No. 63, Lake City, have been completed and equipped. They have a capacity for 300 patients. Major R. W. Brown is commanding officer of the institution.

ILLINOIS

Money Spent for "Patent Medicines."—According to an estimate of the U. S. Public Health Service, people in Illinois last year spent $30,000,000 for "patent medicines." For state public health service they spent, it is said, less than $500,000.

A Staff Dinner.—The physicians of the Brokaw Hospital staff gave a dinner at the Bloomington Country Club in honor of Dr. Perry L. Noggle, who will move to Florida, and to Dr. Joseph Norman Elliott, who goes to the Ford Hospital, Detroit.

Personal.—Dr. Katherine B. Luzader, chairman of the Bond County Community Nursing Service, has been reelected to that office.——Dr. Frank L. Alloway, Champaign, has been appointed attendant specialist in eye, ear, nose and throat to the U. S. Veterans' Bureau, Champaign, to succeed Dr. Ralph W. Hulett who resigned on account of ill health.

Standard Program for County Tuberculosis Work.—The Madison County Medical Society, at its meeting at Edwardsville, September 7, and the Rock Island County Medical Society at Moline, September 11, unanimously endorsed a county tuberculosis program presented by Dr. George T. Palmer, Springfield, president of the Illinois Tuberculosis Association, to be carried out by the county sanatorium board and including regular consulting clinical service, extension of nursing service and the care of tuberculous patients in the higher type of existing public or private sanatoriums.

Board of Education Drops Physicians.—The three physicians who for a number of years have been retained by the board of education of Belleville regularly to "inspect" the physical condition of school children, will not be reappointed. Their former duties in this regard have been taken over by a school nurse employed at $160 a month, which means a saving to the board of $900 a year. Abandonment of the school physician system, it is said, was due largely to a controversy that arose last year in which the physicians objected to the school nurse making diagnoses. Those who will not be reappointed are Drs. Adolph E. Hansing, Henry Reis, Jr., and Charles R. Huggins.

INDIANA

Hospital News.—The Hope Methodist Hospital, Fort Wayne, is being remodeled to provide for eighteen additional beds, and additional roentgen-ray equipment. Dr. Merrill F. Steele is superintendent of the institution.

IOWA

Child Welfare Clinic.—The child hygiene staff of the University of Iowa will visit various towns in Sac County, beginning September 24. The arrangements for the clinic were made through efforts of the county medical society and the county health nurse. The work will comprise (1) examination of infants and children up to 15 years of age, (2) advice to parents of such children and (3) advice to expectant mothers. The service is without charge.

Maternity Clinics.—Under the auspices of the extension division of the State University of Iowa College of Medicine, Iowa City, and under the provision of the Sheppard-Towner Law, clinics have been held in thirty-five counties of the state, in all of which there has been the active cooperation of each county medical society. The medical staff consists of three pediatricians, three women physicians and one obstetrician. Dr. L. R. Randal, of the State University of Iowa, will meet with the county medical societies at their meetings on request to the director of the extension division of the university. Prof. Edward H. Lauer has recently been appointed as director of the extension division of the university, to succeed Prof. Orie E. Klingaman, who resigned to accept a position in New York.

KENTUCKY

Campaign to Encourage the Use of Milk.—A "Milk for Health Week" will be observed at Hopkinsville, beginning October 22, to encourage the feeding of milk to children. It will be supervised by the federal department having charge of this work, and various city organizations will cooperate. Dr. William E. Gary is chairman of the campaign, it is said, the first of its kind to be held in Kentucky. A recent survey of the school children of Hopkinsville showed that 55 per cent. of them were undernourished, it is reported.

MAINE

Public Health Meeting.—The annual meeting of the Maine Public Health Association was held in Bangor, August 28, under the presidency of Dr. Elmer D. Merrill, Dover-Foxcraft. Dr. Charles A. Moulton, Hartland, president of the Maine Medical Association, and Dr. Bertram L. Bryant, Bangor, secretary of the public health association, gave addresses.

MARYLAND

New President of State Medical Society.—On account of the death of Dr. Herbert Harlan, president of the Medical and Chirurgical Faculty of Maryland, Dr. Harry Friedenwald, Baltimore, has been elected by the council as president of the faculty for the remainder of the year.

Memorial Hospital Staff Moves.—The entire personnel of the Union Memorial Hospital, Baltimore, has been removed, after three weeks of preparation, from its old quarters on Division Street to the new structure at Thirty-Third and Calvert Streets. The official opening will be September 22. Patients will be received September 24.

MASSACHUSETTS

Hospital News.—A campaign for funds for the new $100,000 wing to the Massachusetts Women's Hospital at Roxbury, Boston, is being planned by the Woman's Charity Club, Boston. The addition will contain twenty-five rooms, which will be used for maternity cases.

MICHIGAN

State Medical Meeting.—At the one hundred and third annual meeting of the Michigan State Medical Society at Grand Rapids, September 11-13, the following officers were elected for the ensuing year: president, Dr. Guy L. Connor, Detroit; vice presidents, Drs. William Northrup, Grand Rapids; Edward Sawbridge, Stephenson; Alvan A. Rosenberry, Benton Harbor, and Michael F. Brondstetter, Mount Pleasant; treasurer, Dr. David Emmett Welsh, Grand Rapids, and secretary-editor, Dr. Frederick C. Warnshuis, Grand Rapids. The next annual meeting of the society will be held at Mount Clemens, in 1924.

Personal.—Dr. Lloyd C. Harvie has resigned as city physician of Saginaw.——Dr. Alexander Corpron, Ypsilanti, recently sailed from New York for Bombay on his way to Nadiad, Western India, to resume his practice as a medical missionary in the Thoburn Memorial Hospital.——Dr. Clarence V. Spawr, Benton Harbor, has been elected department commander in Michigan of the American Legion.——Dr. Egerton T. Wilson, U. S. Veterans' Bureau, has been appointed chief medical officer in the Saginaw office to succeed Dr. James J. Haviland, who resigned, September 1, to resume private practice in Oswoso.

MINNESOTA

Public Health Meetings.—The annual meeting of the Minnesota Public Health Association will be held at St. Paul, October 31.——The annual meeting of the Minnesota State Sanitary Conference will be held at the time of the Minnesota Educational Association's annual session in St. Paul.

A Survey of Midwives.—The division of child hygiene is conducting a survey of midwives in Minnesota and making statistical studies of births and maternal and infant deaths. Physicians and health officers are requested to send the names of midwives, licensed or otherwise, known to them, to the division of child hygiene. A full report of the work done will be made at the annual meeting of the Minnesota State Medical Association in October.

Personal.—Dr. Carol E. Jameson of the Mayo Clinic, Rochester, has sailed for Vellora, India, where she will continue the practice of medicine.——Dr. Walter E. Hatch, Duluth, has been appointed physician in charge of the venereal clinic at St. Mary's Hospital (the Mayo Clinic) to succeed Dr. O. A. Oredson, who resigned recently.——Dr. John Anderson of the London School of Tropical Medicine, London, England, visited the Mayo Clinic on his way to Hong Kong, China, where he will take a chair of medicine at the Hong Kong University of Medicine.——Dr. E. P. Lyon, dean of the University of Minnesota Medical School, recently attended the Physiological Congress at Edinburgh, Scotland, preceding a tour of Europe.——Dr. Edward G. Joseph of the Mayo Clinic, Rochester, will in the future practice surgery in New Zealand.

MISSOURI

Dr. Burrill Honored.—Dr. Charles W. Burrill, Kansas City, was elected surgeon-in-chief by the Grand Army of the Republic, September 6, to succeed Dr. George T. Harding, Marion, Ohio, father of the late President.

Alumni Banquet.—There will be a University Medical College Alumni reunion banquet, October 9, at 7:30 p. m., in the Francis I Room, Hotel Baltimore, Kansas City. For information, address Dr. Hermon S. Major, chairman entertainment committee, 3100 Euclid Avenue, Kansas City.

Medical Meeting.—The first autumn meeting of the Buchanan County Medical Society was preceded by the thirteenth annual dinner at the sanatorium of Dr. Charles R. Woodson, St. Joseph, September 5. Dr. Woodson and Dr. Jacob Geiger, the two oldest members of the profession in St. Joseph, gave addresses.

Personal.—Dr. George A. Johns, St. Louis, was recently appointed superintendent of the new St. Louis Training School for the Feebleminded. Dr. Johns was for twelve years superintendent of the City Sanatorium.——Dr. Frederick C. E. Kuhlmann, formerly of St. Louis, has resigned from the U. S. Public Health Service and will resume practice in St. Louis County.——Dr. Richard L. Sutton, Kansas City, professor of dermatology, University of Kansas School of Medicine, Lawrence, has left for big game hunting in Tanganyika, British East Africa.

NEBRASKA

Soldiers' Home Offered to Government.—The recent state legislature offered as a gift to the nation the state soldiers' home on the outskirts of Grand Island, if the government will provide for veterans of all wars therein. The offer is being considered by the Veterans' Bureau. The property comprises more than a section of land, and buildings worth several hundred thousand dollars, it is reported.

Personal.—Dr. Samuel J. Stewart, superintendent of the Institution for the Feebleminded at Beatrice, has resigned.——Dr. Ira H. Dillon, former head of the Bureau of Health of Nebraska, has located at Waterloo, Iowa.——Dr. George P. Shidler, York, has been appointed physician at the women's reformatory at York to succeed Dr. Leo D. Rose, Utica, who resigned.——Dr. Andrew Sinamark has accepted a position with the Veterans' Bureau, with headquarters at Omaha.

NEW HAMPSHIRE

Personal.—Dr. Clara Israeli, Concord, has resigned as pathologist of the state board of health, to accept the position of resident physician of the city board of health, Manchester.

NEW MEXICO

Personal.—Dr. George S. McDonald, health officer of Torrance County, has resigned and will return to his home in Kentucky.——Dr. Guy W. Luckey has been appointed full-time health officer for Valencia County.

NEW YORK

"Bone Doctor" Arrested.—It is reported that Charles Czganik, Seneca Falls, "bone specialist," was arrested, September 15, on a charge of manslaughter. The charge was made, it is said, after a necropsy had been performed on Peter Gierlowski, who fractured four vertebrae in a fall from a tree. Gierlowski, who was first attended by surgeons, consulted Czganik, who removed the cast and attempted to manipulate the bones.

Hospital News.—A $250,000 addition will be erected at the Niagara Falls Memorial Hospital, Niagara Falls.——Bids closed, August 30, for the new $100,000 building to be erected at the Herkimer Memorial Hospital, Herkimer.——The additions to the Nassau Hospital, Mineola, L. I., are nearing completion. In order to hasten the work, a part of the hospital has been closed for two months, so that only cases of accident or of very serious illness are being cared for at the institution. When the construction work has been completed, the hospital will afford ample facilities for the district it serves.

Anesthetists Meet.—The New York Society of Anesthetists held a joint meeting with the Boston Society of Anesthetists, the Providence (R. I.) Society of Anesthetists, the Second District (N. Y.) Dental Society and the Third District (N. Y.) Dental Society at Albany, September 20, under the presidency of Dr. Charles H. Sanford, New York City. "Psychology in Anesthesia" and "Analgesia and Deep Anesthesia with Nitrous Oxid and Oxygen" were discussed, and clinics were given on gas-oxygen and ethylene.

New Health Secretary.—Dr. Matthias Nicoll, Jr., state commissioner of health, has announced the appointment of Dr. Edward H. Marsh, Brooklyn, as secretary of the New York State Department of Health to succeed Curtis E. Lakeman. Dr. Marsh, who is assistant professor of preventive medicine at Long Island Hospital Medical College, lecturer on hygiene in the University and Bellevue Hospital Medical College and consulting dermatologist to the Nyack Hospital and the Huntington Hospital, L. I., has served for a number of years as secretary of the public health council of the state board of health (which position he will continue to fill) and as sanitary supervisor.

Memorial to Dr. Biggs.—The July issue of *Health News*, the monthly bulletin of the New York State Department of Health, is a memorial to Dr. Hermann M. Biggs, state health commissioner from 1914 until the time of his death. Among those who have contributed in recognition of the services of Dr. Biggs are: Drs. Matthias Nicoll, Jr., T. Mitchell Prudden, William H. Park, Simon Flexner, H. Homer Folks, Linsly R. Williams, L. Emmett Holt,

S. Josephine Baker, C. E. A. Winslow, Livingston Farrand, Frederick F. Russell, Walter B. James, Walter F. Wilcox, Hugh S. Cumming, Charles V. Chapin, George C. Whipple, Victor C. Vaughan, Mazyck P. Ravenel, C. E. Levy and Eugene R. Kelley.

New York City

Neurologic Clinics Open.—The Neurological Institute, 151 East Sixty-Seventh Street, announces that a night treatment clinic for men will be open on Monday and Thursday evenings, and for women on Tuesday and Friday evenings at 7 p. m.

Health Day for City Schools.—Announcement has been made that November 13 has been set aside as Health Day in the schools of the city. On that day, all regular work will be put aside and the time given to matters pertaining to health. Each teacher will examine her pupils, and send those she thinks need attention to the department of hygiene.

New Italian Hospital.—The annual festival for the Italian Hospital will be held this year at the Manhattan Casino, September 20. Dr. John W. Perilli, president, states that funds raised on this occasion will form the nucleus of a $2,000,000 fund with which a modern hospital building will be erected. The present building is inadequate to meet the demands made by the Italian population of this city.

Free Lectures at New York Postgraduate Medical School.—A course of lectures is announced by the Post-Graduate Medical School and Hospital to be given at 5 o'clock, Friday afternoons during the coming season. These lectures will be free, and all members of the medical profession in New York City and vicinity are invited to attend. The following lectures are scheduled for next month: October 5, "The Treatment of Nephritis," Dr. Arthur F. Chace; October 12, "A Diagnostic Clinic," Dr. John F. Erdmann; October 19, "The Pathology and Prognoses of Eye Changes in Diabetes," Dr. Max Cohen; October 26, "Uterine Hemorrhage—Its Significance and Treatment," Dr. Henry Dawson Furniss.

Hospital News.—A $15,000 addition will be erected at the New York Nursery and Childs' Hospital.——A $250,000 home will be erected by the Bronx County Society for the Prevention of Cruelty to Children.——The New York Institute for the Education of the Blind has sold the block on the east side of Ninth Avenue and Thirty-Fourth Street, which it has occupied for nearly fifty years. The sale price was approximately $1,000,000.——The drive to raise $100,000 with which to build an additional wing to the Brownsville and East New York Hospital, which was discontinued during the months of July and August, will be resumed at once. It is expected that construction work on the new building will be begun next spring.——The Beth Israel Hospital, which needs $1,500,000 to complete the new buildings, has adopted the plan of "selling" 300 beds in the new structure at $5,000 each. Thus far, sixty-seven have been "sold."——Work of constructing the new wing to Trinity Hospital at East New Avenue and Fulton, Brooklyn, has been started and it is expected that the whole plan of remodeling the hospital will be completed by the first of the year. It is estimated that the cost of the improvements will approximate $200,000.

NORTH CAROLINA

Progress Against Bovine Tuberculosis.—In the present campaign to eradicate tuberculosis in dairy herds of the state, the herds of ten counties have all been tested, released and passed by the state department of agriculture. The inspections have been completed in three other counties, which will be recommended for release this month. In fifteen other counties that have made appropriations for this purpose, inspections are progressing in nearly all of them. The inspector in charge of the work said, it is reported, that less than 2 per cent. of the cattle of the state now are tuberculous, a contrast to some states in which from 21 to 40 per cent. are not uncommon figures. He said also, "I am disappointed to find so few cattle on the farms of North Carolina. With its climate and ideal conditions for year round grazing, this could be made a great cattle-breeding state. North Carolina needs more cattle. We are trying to make health conditions better for these cattle so that herds may be built up without danger of infection from tuberculosis."

TENNESSEE

Personal.—Dr. Lockhart D. Arbuckle, Nashville, medical officer of the U. S. Navy recruiting service in the state, has been assigned to the U. S. S. *Savannah*. Dr. Robert W. Wimberly, Washington, D. C., will succeed Dr. Arbuckle.——Dr. Eugene L. Bishop, Nashville, has been appointed superintendent of the division of rural sanitation of the state board of health.

Annual Meeting of Medical Society.—The Walnut Log Medical Society, organized a year ago by members of the Fulton and Hickman County medical societies of Kentucky and of the Obion and Dyer County medical societies of Tennessee, will hold its first annual meeting at the Walnut Log Hotel, October 17-18. Since only a limited number can be accommodated this year, hotel reservations will be made on applications for membership to which any member of the component societies is eligible. The session will afford an excellent outing, particularly for members who hunt and fish.

TEXAS

Hospital News.—The Parkland, Woodlawn, Union and Convalescent hospitals of Dallas are now under the control of a hospital board of six members, which have approximately the power of directors of corporations. The county and city will jointly defray the cost of operation of these institutions, whose combined property value is about $285,000.——The new addition to the Parkland City-County Hospital, Dallas, has been completed and the furnishings are being installed. The new institution has a capacity for 206 patients. Dr. George C. Kindley, Dallas, has been appointed superintendent of the institution, and is now in charge.

University Limits Freshman Class.—The School of Medicine of the University of Texas has decided to limit its freshman class to sixty members. The board of regents has approved the decision of the faculty and the limited number applied to the class entering this summer. The first selection of sixty-six applicants were accepted tentatively, July 16, which number was later increased to 100, when sixty were selected from that number strictly on a scholarship basis. This, it is said, is considered necessary, although regrettable. The clinical facilities at Galveston for teaching purposes are limited. There are 300 ward beds and an outpatient department. There were, last year, 3,681 ward patients and 24,502 outpatients. Experience has shown, it is said, that this is sufficient for a class of from forty to fifty in each of the junior and senior years, which means that not more than sixty should be accepted for the first year.

VIRGINIA

Cost of Transportation in Rural Health Work.—A complete and accurate record of the cost of operating 22½ horsepower automobiles used in county health work in Virginia appears in *Public Health Reports*, Aug. 31, 1923. Accurate monthly financial statements were made out for each county in which cooperative rural health work is carried on. The data cover a period of three and a half years, beginning May 1, 1919. The average monthly cost of operation for the 357¾ car-operating months was $41.69. As a solution of the transportation problem of the sanitary officer, each county is given a touring car at the beginning of work, and $25 a month is charged against the county budget of $2,500 a year as an automobile purchasing fund for replacements. This, with the cost of operation ($41.69), makes the total average monthly cost of transportation $66.69, or $800.28 a year. Of thirty-four automobiles bought between May 1, 1919, and March 1, 1923, ten were still in use; of the twenty-two cars sold, fourteen were sold at a profit to the automobile fund and eight at a loss. The roads over which the cars were operated were of all types, and all the operators were reasonably careful and efficient. It is believed, it is said, that the conditions under which these cars were operated were such as to make a fairly accurate estimate of the general average cost of this kind of transportation in county health work.

WISCONSIN

Personal.—Dr. C. W. Muehlberger, a research assistant at the university, has been appointed acting state toxicologist under the new law which created that position.——Dr. Maybelle M. Park, director of the juvenile department of the state board of control, has resigned.——Dr. E. L. McKinley, Dodgeville, has accepted a position on the medical faculty of McGill University, Montreal.

Mental Hygiene Clinic to Be Established.—It is reported that the National Committee for Mental Hygiene will establish a psychiatric clinic in Milwaukee in the near future to work in conjunction with the juvenile court on the same lines as the one established last year in St. Louis. Dr. Smiley Blanton, of the University of Wisconsin, recently reported

that 7 per cent. of the school children of Milwaukee are mentally abnormal.

Use of Narcotics Defined.—The Wisconsin State Narcotic Law, which became effective in July, defines the legitimate use of narcotics as follows:

A physician acting in accordance with proper medical practice may prescribe or dispense narcotics for the relief of acute pain, or for any acute condition, such as influenza, renal calculi, broken limbs, and such incurable diseases as cancer, advanced tuberculosis and other diseases well recognized as coming within this class, and the physician may prescribe no quantity greater than that ordinarily recognized by members of his profession to be sufficient for the proper treatment of the given case. It shall be a violation of this section for any physician to prescribe narcotic drugs to a patient suffering from narcotic addictions except only in cases where the drug addict is being treated by such physician for the cure of narcotic drug addiction.

State Medical Meeting.—The seventy-seventh annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee, October 3-5, under the presidency of Dr. F. Gregory Connell. Dr. William A. Pusey, Chicago, President-Elect of the American Medical Association, will present the only address of the evening at the annual banquet, October 4. He will speak on "A Study of the Wilderness Road to Kentucky—A Doctor's Diversion," the talk to be illustrated. Among other physicians who will give addresses during the session are Drs. Gideon Timberlake, Baltimore; William Clark Danforth, Chicago, and James B. Murphy of the Rockefeller Foundation, New York.

CANADA

Personal.—Drs. Frederick A. Aylesworth, Carl E. Hill, M. Lyon and Walter W. Wright have been recently appointed as senior demonstrators in ophthalmology at the University of Toronto, Ont.——Dr. Helen MacMurchy, Ottawa, Ont., was appointed honorable president of the Child Protection Officers' Association at the annual meeting of the association at Winnipeg, Manit.

Hospital News.—The cornerstone for a new hospital at Essondale for acute mental diseases was recently laid. The hospital will cost $600,000, and will be ready for occupancy in March, 1924.——A hospital which will cost about $150,000 will be erected soon at Nanaimo, B. C.——The third hospital to be established in New Ontario by the Ontario division of the Canadian Red Cross Society was officially opened last week at Dryden, Ont.——A campaign among residents of the east end of Toronto, Ont., will soon be inaugurated to raise $500,000 for the erection of a general hospital. Interest in the project has been stimulated by a donation of $100,000 by the Hill estate of Toronto, which will soon be handed over to the hospital committee. The hospital will be modern in every respect and will accommodate 200 patients.

Western Ontario Aademy of Medicine.—The academy of medicine held its first general session of 1923-1924 in the Medical School Auditorium, London, Ont. Dr. Charles S. McVicar of the Mayo Clinic, Rochester, Minn., spoke on "Sick Headache in Relation to Gastro-Intestinal Diagnosis" and "The Internist's Responsibility and Factors Involved in the Selection and Preparation of Surgical Risks." Dr. J. C. Masson, also of the Mayo Clinic, gave an address on "Uterine Prolapse and Its Treatment." The district meeting of the Ontario Medical Association comprising Middlesex and the adjoining counties will be held conjointly with the academy meeting, October 4. The morning program will be clinics by the staff of Victoria Hospital and the medical school. The afternoon program will comprise addresses by Dr. Joseph C. Bloodgood, Baltimore, on "Cancer Problems," and Dr. O. P. Kimball, Cleveland, on "Goiter Prevention." An open forum will be held in the evening to discuss public health questions.

GENERAL

Biography of General Gorgas.—The widow of the late Surg. Gen. William C. Gorgas is collaborating with Burton J. Hendrick, author of "The Life and Letters of Walter H. Page" in preparing a biography of General Gorgas. It is hoped to be able to publish the biography during the coming year.

Central Neuropsychiatric Association.—The Central Neuropsychiatric Association will hold its annual meeting at St. Louis, October 20. The program will be provided by the neuropsychiatrists of St. Louis and will include clinics on neurosurgery, neurology, psychiatry, endocrinology and mental hygiene, as well as reports and demonstrations of research work now being carried on.

Society Amends By-Laws.—The Radiological Society of North America, at the midyear meeting in San Francisco, amended its by-laws to the effect that in the future its official journal, *Radiology*, will be published under the control of a committee composed of members of the society. Dr. Maximilian J. Hubeny, Chicago, was chosen editor. The first issue under the new editorship appeared this month.

American Roentgen Ray Society.—At the twenty-fourth annual meeting of the American Roentgen Ray Society at the Congress Hotel, Chicago, September 18-21, Dr. Hollis E. Potter, Chicago, was installed as president. The $1,000 Leonard prize for the best original research in the field of roentgen ray, radium or radioactivity was awarded to Prof. William Duane of Harvard University, Boston. Representatives from several foreign countries were present at the sessions.

A Plant for Cleansing Oysters.—According to the *Engineering News-Record* (June 14, 1923), a plant for the purification of oysters consists of two 6,000 gallon basins into which sea water disinfected by electrolytically produced sodium hypochlorite is pumped. There is thus produced an excess of chlorin in the water in which oysters are allowed to lie in layers not more than 8 inches deep. The process is simple and the cost is low enough to make the plan practical. The tanks will handle 400 bushels of oysters in twenty-four hours.

German Grants for Scientific Research.—The Prussian Academy of Science voted grants for this year's research, July 25. Their value, computed by Professor Goldschmidt, Berlin, as of that date was as follows: Dr. F. Leng for work on the physiology of cell division, 20,000 marks, the equivalent of 4 cents; Professor Pompecky, for work on the Tendagusu fossils, 80,000 marks, or 18 cents; Professor Guthnick, for thermo-electric measurements of stars, 100,000 marks, or 22 cents. The largest award was for work on the Egyptian texts, 500,000 marks, or $1.11.

The Millbank Memorial Fund.—Dr. Stephen A. Douglass, head of the tuberculosis branch of the National Military Home Hospital, Dayton, Ohio, has been offered the clinical directorship of the Millbank Memorial Fund, which was established to conduct clinics in various localities in an effort to lower the death rate in the United States. Clinic centers will be established in Cattaraugus County, N. Y., in Syracuse, N. Y., and the Bronx, New York. Between $300,000 and $400,000 will be spent annually for at least five years, under the administration of a board of trustees. The project will resemble in some respects the Framingham community.

Prizes for American Chemists.—At the annual meeting of the American Chemical Society, in Milwaukee, it was announced by President Edwin C. Franklin that more than $80,000 in prizes, consisting of money, scholarships and books, will be distributed by the society to students in the high, secondary and higher educational schools of the United States as awards in essay contests in chemistry next year. The amount was made available through Mr. and Mrs. Francis P. Garvan of New York in memory of their daughter. The Allied Chemical and Dye Corporation of New York gave $500,000 to found the American Chemical prize with an annual value of $25,000 to be awarded the chemist in America who, in a period to be determined, makes a contribution of outstanding merit in the science of chemistry. Washington, D. C., was announced as the convention city for the spring meeting of the society in 1924, and Ithaca, N. Y., for the autumn meeting.

Annual Meeting of Tri-State District Medical Association.—The annual assembly of the Tri-State District Medical Association will be held at Des Moines, Iowa, October 29-November 1. The association began as a district association about ten years ago. It now includes practically all the Middle Western states. It is a postgraduate organization with no political or legislative duties. The annual assemblies are devoted to medical advancement and study in the form of diagnostic clinics, orations, symposiums and discussions. The membership is received by registration. In order to register, a physician must be in good standing in the state medical society in the state in which he resides. The officers are: president of clinics, Dr. William J. Mayo, Rochester, Minn.; president, Dr. Horace M. Brown, Milwaukee; president-elect, Dr. Clifford U. Collins, Peoria, Ill.; managing director, Dr. William B. Peck, Freeport, Ill.; associate managing director, Dr. J. Sheldon Clark, Freeport, Ill.; secretary, Dr. Edwin Henes, Jr., Milwaukee, and treasurer, Dr. Henry G. Langworthy, Dubuque, Iowa.

The Demand for Supplemental Academic Training.—The U. S. Public Health Service in 1920 conducted a venereal disease summer school that covered two weeks of intensive study. The following year, it held sixteen general public health summer schools at various geographic centers in cooperation

with state departments of health. Three times the number expected attended in 1920, and a large number were present in 1921. This experience led the U. S. Public Health Service to send a letter of inquiry to about 9,500 practicing physicians, 6,000 public health nurses and 3,500 employees of health departments, to determine their interest in summer schools of six or eight weeks' duration. There were more than 6,000 replies to 20,571 letters, and of these 5,746 replied that a need exists for the type of instruction proposed; 1,970 physicians replied they could probably attend if the instruction was not given too far from home. A later announcement will be made, it is said, of plans for public health summer schools to meet the demand for supplemental training revealed by this inquiry.

Prevalence of Epidemic Diseases.—The service of epidemiologic intelligence and public health statistics of the League of Nations gives in a recent bulletin the general weekly mortality rates (on annual basis) of prevalent notifiable diseases in the larger cities of Europe, Africa, America, Australasia and Asia from Dec. 31, 1922, to July 14, 1923. It is said that there has been a decline in the prevalence of cholera in India. Typhus and relapsing fever continue to decrease in Russia; in Poland they have continued at the same level, with no indication of an epidemic rise. The incidence of both diseases in these countries is far below what it was in 1922. Typhus was reported from Czechoslovakia, Bulgaria and Algeria. The high incidence of influenza persists in Spain, but a rapidly declining incidence was reported for Norway, Sweden, the United States and Algeria. A rise in the prevalence of malaria is reported from Russia. Smallpox has decreased in India, since the crest of the epidemic was reached in March. In the United States, the number of cases notified in the twenty-seven states for which reports are recurrently given (population approximately 60,000,000) has shown a tendency to drop during June, but the incidence continued to remain on a relatively high level throughout the year up to that date. While the number of cases of cerebrospinal meningitis reported for every country is small, the disease continues to be widespread in Europe and in the United States. The number of cases of epidemic (lethargic) encephalitis is reported on the decline in all countries.

Bequests and Donations.—The following bequests and donations have recently been announced:

Woman's Hospital, New York City, $2,000,000, and the Frederick Ferris Thompson Hospital, Canandaigua, N. Y., $400,000, by the will of Mrs. Mary Clark Thompson.

The New York, St. Luke's and the Presbyterian hospitals, New York, are to divide equally the residual portion of the estate of the late John H. Flagler, after $500,000 is given to the newly incorporated Alice Mandelick Flagler Foundation, for charitable purposes. Nurses are intended to be the chief beneficiaries of this foundation.

The Home for Incurables and the Presbyterian Hospital, Philadelphia, together with two other sectarian institutions, are named in the will of the late George H. Buchanan. The four institutions are to receive the residue of a personal estate of "more than $200,000," the bulk of which is left to two daughters of the testator.

Monmouth Memorial Hospital, Long Branch, N. J., $60,000 for an addition to its nurses' home, by Park M. Wooley of New York.

Harvard College, Radcliffe College and the Massachusetts General Hospital, Boston, each, $50,000; New England Hospital for Women and Children, the Children's Hospital, the Infants' Hospital, Boston, and the Bertram Home for Aged Men, Salem, Mass., each $10,000; the Home for Aged Colored Women, the Perkins Institution for the Blind and the Industrial Home for Crippled and Deformed Children, Boston, each $5,000, under the will of David P. Kimball of Boston.

University of Pennsylvania, Philadelphia, for a scholarship, $5,000, and to the Hahnemann Hospital of Philadelphia, $5,000, for a free bed, and to the Children's Homeopathic Hospital, Philadelphia, $5,000, by the will of Clara P. Kilpatrick.

Biloxi City Hospital, Biloxi, Miss., $3,072, the proceeds from a fête held by the Elks Club.

Children's Hospital School, Baltimore, $1,000, to be known as the James Farnandis Fund, and $1,000, to be known as the Elizabeth Farnandis Fund, under the will of Mrs. Elizabeth Farnandis Mitchell.

Knoxville (Tenn.) General Hospital, a completely equipped children's ward, by Dr. W. S. Nash.

Petersburg (Va.) Hospital, a new $250 etherizing apparatus by members of the women's auxiliary of the institution.

LATIN AMERICA

Installation of the New President of the National Public Health Service in Argentina.—The president of Argentina has appointed Dr. Gregorio Aráoz Alfaro to be president of the national department of hygiene. This department is to be extensively reorganized, according to the *Semana Médica* for August 9, with a view to correlating its action with the work of all the other health organizations.

Memorial to Arteaga.—A marble tablet was placed in the Hospital of Maternity and Infancy, Havana, July 17, in memory of Dr. Julio F. Arteaga, whose name has been given to one of the wards. A portrait was also unveiled. Dr. Huguet, director of the hospital, made the address. The ceremony was presided over by Dr. Juan F. Morales Lopéz, as the representative of the national public health service.

Supervision of the Practice of Medicine in Peru.—The committee appointed to investigate and suggest ways and means for regulation of the practice of medicine in Peru has been organized. It includes the following representatives of various professional entities: Dr. Estanislao Pardo Figueroa, president and representative of the government; Professors Avendaño and Paz Soldán, representatives of the medical faculty; Drs. H. Larrabure, representative of the Academia de Medicina; Graña of the Peruvian Sociedad de Cirujía, and Ricardo Palma, representative of the Círculo Médico of Peru.

Appeal for Legislation to Regulate Medical Advertising.—The *Brazil-Medico* relates that the Sociedade de Medicina e Cirurgia has appealed to the authorities to amend the law regulating advertising, and provide that the editors of newspapers, journals and other publications shall be held responsible for all advertisements or other matter published referring to the practice of medicine or pharmacy of a secret character. Advertisements shall be considered of a secret character when they relate to the treatment of any disease or other affection without the confirmation of a qualified professional, the testimonials not signed by physicians, and the declarations of treatment guaranteed by individuals or groups of individuals. Penalties are to be provided for infraction of these rules. The bill is now under discussion.

Congress of Hygiene in Brazil.—The *Brazil-Medico* for August 4 announces that the first Brazilian congress of hygiene was to meet in Rio de Janeiro under the direction of the Sociedade Brazileira de Hygiene, Sept. 7, 1923. Among the subjects to be considered were: ventilation of buildings; hygienic improvement of cities; improvement of measures against mosquitoes in large cities; value of disinfection in prevention of infectious diseases; feeding of children; soldiers' rations; infantile hygiene; organization of public health nursing; antimalarial measures; sanitation of municipalities; hospital isolation as prophylaxis against tuberculosis, and free treatment in venereal diseases. Among the speakers on these questions will be Prof. José C. del-Vecchio, Dr. Eustachio Bittencourt Sampaio, Prof. João Felippe Pereira, Dr. Domingos Cunha and Miss Ethel Parsons.

Personal.—Prof. A. R. Marotta, of the editorial staff of the *Prensa Médica Argentina*, has, by the president of the republic, on recommendation of the directing council of the medical faculty, been appointed professor of the surgical clinic at the University of Buenos Aires.——Dr. Felipe A. de la Torre, surgeon of the military hospital of San Bartolomé, Peru, has left for a journey of study in Europe.——Dr. B. Sosa Artola has gone to Europe as representative from Peru to an international congress of the Red Cross.——Dr. Fernando Gorriti has been appointed assistant director of the national colony of the insane of Argentina.——Prof. José María Jorge has been appointed delegate from Argentina to the national French medical congress in Bordeaux, to be held September 27-29. The congress includes all French-speaking countries.——Dr. Carlos Chagas, chief of the national public health service of Brazil, director of the Instituto Oswaldo Cruz and representative from Brazil to a committee of the League of Nations, was the guest of honor at a dinner given by the king and queen of Belgium in the castle of Laeken.

FOREIGN

South African Medical Association.—The nineteenth annual session of the South African Medical Association will be held at Grahamstown, in 1924, under the presidency of Dr. E. G. Dru Drury of that city.

Memorial to Pravaz.—The small town in France where the inventor of the type of the hypodermic syringe, Dr. C. G. Pravaz, was born in 1791 is to raise a monument to his memory. He founded an orthopedic institute at Lyons and is said to have been the first to apply electricity in treatment of aneurysms.

Hospital News.—At the London (Eng.) Hospital, 17,444 inpatients and 107,455 outpatients, who made 466,337 separate attendances, were treated last year. The average total cost of each inpatient was $50, and of each outpatient, $2.50.—— An anonymous donor has donated the sum of $1,000 yearly to King Edward VII Hospital for the purchase of insulin.

Scientific Institution to Combat Transmissible Diseases in Netherlands Indies.—The *Nederlandsch Tijdschrift voor Geneeskunde* reports that the committee in charge of the approaching Queen Wilhelmina jubilee in Dutch India has collected 230,000 florins to be used for the purpose of establishing an

institution for scientific investigations with a view to combating transmissible diseases. The institution will be called "Koningin Wilhelmina Jubileumstichting."

Foreign Congresses May Be Held in America.—At the Edinburgh meeting of the International Physiological Congress an invitation to meet in the United States was presented by Prof. A. J. Carlson, president of the American Physiological Society, and an international committee was appointed to consider the possibility of accepting for 1926.——At the International Congress of Psychology at Oxford the question of meeting in the United States in 1926 was also considered.

The Parkin Prize.—In a bequest made to the Royal College of Physicians of Edinburgh by the late Dr. John Parkin, a prize of $500 is offered for the best essay on certain subjects connected with medicine. The subject of the essay for the present period, in terms of the deed, is: "On the Curative Effects of Carbonic Acid Gas or Other Forms of Carbon in Cholera, for Different Forms of Fever and Other Diseases." The prize is open to competitors of all nations, but the essays must be written in the English language and must be received by the secretary not later than December 31.

Students' Number of the Lancet.—The *Lancet* of Aug. 25, 1923, is devoted largely to medical education in England. The metropolitan medical schools and hospitals are grouped under the University of London, of which they are constituent bodies, and a similar plan is adopted in dealing with the provincial universities, the hospitals connected with which are described with the universities. Regulations for examinations, both preliminary and professional, at these centers are set forth. An account is also given of conditions under which commissions can be obtained in the various medical services of the government.

Society News.—The Spanish Congress of Pediatrics was held at San Sebastian, September 2-7, under the presidency of Dr. Arquellada.——The twenty-ninth Congress of the Italian Society of Internal Medicine will be held in Rome, October 24-26, under the presidency of Dr. V. Ascoli. Prof. Maurizio Ascoli will discuss "Diabetes Insipidus," and at a meeting held in conjunction with the Italian Society of Surgery, Prof. Ferruccio Schupfer will speak on "Cholelithiasis, with Special Reference to Pancreatitis and Infection of the Bile Ducts."——The second congress of the Italian Society of Urology will be held in Rome, October 27. Professor Mingazzini is secretary of the society.

The International Congress on Puerperal Fever.—The international gatherings in honor of the Pasteur centennial would not be complete, it was reiterated, without one devoted to puerperal fever. The one just held at Strasbourg, with a numerous attendance, and delegates from far and near, was presided over by Professor Bar of Paris. After the historical session, the etiology and prophylaxis of puerperal fever were discussed, Hauch of Copenhagen declaring that neither bacteriology nor microscopic examination of the blood is of much use in the diagnosis in comparison to clinical observation. Alfieri of Pavia summarized the present status of treatment according as the lesions are circumscribed to the uterus or the infection has become general, emphasizing the vital importance of an early diagnosis, allowing local obstetric or surgical treatment while the foci are still accessible.

Personal.—Dr. Huertas, director of the provincial hospital of Madrid, has been decorated by the Greek government with the insignia of the order of George I.——Professor Recasens, dean of the medical faculty of Madrid, has been made commander of the Légion d'honneur of France.——Dr. B. Galli-Valerio, on the twenty-fifth anniversary of his professorship at the University of Lausanne, was honored by his colleagues and present students by an address recording his life and work in hygiene and parasitology.——Prof. Riccardo Versari, director of the institute of anatomy of the University of Rome, has received the gold medal of the Società Italiana delle Scienze for a recent work on embryology of the human eye.——Dr. Andrew Balfour, for the past ten years director-in-chief of the Wellcome Bureau of Scientific Research, London, England, will resign, October 31. He will be succeeded by Dr. C. M. Wenyon, for nine years director in research in the tropics at the Wellcome Bureau.——Dr. C. U. Ariens Kappers, director of the Netherland Central Brain Institute, Amsterdam, has sailed from Marseilles en route to Peking, China, where he will lecture in the Union Medical College. Dr. C. J. Van der Horst will be in charge during Dr. Kappers' absence. During the summer American workers at the laboratory have been Dr. W. H. Addison, of the University of Pennsylvania, and Dr. H. H. Charlton, of the University of Missouri.

Deaths in Other Countries

J. G. Saner, M.B., M.C., F.R.C.S., Johannesburg, formerly resident surgical officer at Guy's Hospital, London, and a veteran of the World War.——**Dr. E. Schlumberger,** formerly chief of staff of the hospitals of Mulhouse, aged 73.——**Dr. G. Cosco,** inspector general of the public health service in Italy until retired recently, author of works on laboratory research and prophylaxis of epizootic diseases.——**Dr. Strauss,** Paris, medical inspector general, honorary director in the war department.——**Dr. Natale La Placa,** killed in a motorcycle accident in Sicily. Two years ago the profession in Sicily presented him with a gold medal in token of appreciation of his efforts for the welfare of the rank and file of the profession.——**Dr. Julio Carrerá y Angulo,** on the staff of the municipal hospital at Havana, vice president of the Sociedad de Estudios Clinicos.——**Dr. Gregorio Hunt,** director of the hygiene department of the Asistencia Pública at Buenos Aires.——**Dr. P. L. Boulloche,** chief of staff at a large Paris children's hospital for twenty years.——**Dr. F. Spallitta,** professor of physiology at the University of Palermo, aged 63. He was one of the pioneers in experimental physiology.——**Dr. Evaristo Ausín y Ortega,** Madrid, said by the *Medicina Ibera* to be the last representative of homeopathic medicine in Spain.

CORRECTION

Construction Continues at Reconstruction Hospital.—It was stated in THE JOURNAL, June 16, p. 1782, that construction work had been indefinitely postponed at the Reconstruction Hospital, New York. The executive secretary of the hospital has informed THE JOURNAL that this item was wrong and that construction work has never been discontinued.

Government Services

Special Instruction in the Navy

The Surgeon General of the Navy has instituted a policy of affording members of the medical corps opportunities to take courses of instruction in special branches of medicine and surgery at civilian institutions in this and foreign countries. The medical officers selected are required to demonstrate their qualifications to become specialists in the particular work to which they are assigned. Navy medical officers are encouraged to choose some specialty after having qualified as general medical officers and, as far as practicable, are encouraged to continue along the lines of work selected.

During the last fiscal year, of the 760 medical officers in the navy sixty-seven received special courses of instruction at civilian institutions, and thirty others completed the special course of naval medicine and surgery at the U. S. Naval Medical School, Washington, D. C. Some of the institutions to which medical officers were detailed for instruction are: aviation medicine, U. S. Army School of Aviation Medicine, Mitchel Field, L. I.; diseases of the heart, the National Hospital, London, England; diseases of the eye, ear, nose and throat, Harvard University Medical School, Boston, and at certain hospitals and clinics in Philadelphia; internal medicine, Harvard University Medical School, and the Massachusetts General Hospital, Boston; urology, the Brady Institute, Baltimore, and the University of California, San Francisco; surgery, the Mayo Clinic, Rochester, Minn., and the Laboratory of Surgical Technique, Chicago; gynecology and obstetrics, the Lying-In Hospital, New York, and Harvard University Medical School, Boston; pediatrics, Harvard University Medical School, Boston; electrocardiography, hospitals at Brooklyn and Johns Hopkins Medical School, Baltimore; roentgenology, the University of California, San Francisco; industrial hygiene, Harvard University School of Public Health; psychiatry, Government Hospital for the Insane, Washington, D. C., and tropical medicine, the London School of Tropical Medicine, London, England.

Similar opportunities have been afforded dental officers, twenty of whom received special courses in dental surgery during the year, at Northwestern University Dental School, Chicago; Columbia University Dental School, New York; the Mayo Clinic, Rochester, Minn., and the U. S. Naval Dental School, Washington, D. C.

Program for Interchange of Health Officers

The Third Interchange of Health Officers, arranged by the health section of the League of Nations, was in session at Washington, D. C., during the week of September 10-15, at

the offices of the U. S. Public Health Service. Twenty-four physicians and health officers, representing each of the countries of Europe, and Canada, Brazil, Mexico, San Salvador and Chile, participated in a course of study and observation of health conditions and sanitation in the United States. The program arranged by the U. S. Public Health Service included addresses by officials of the service on subjects of health activities and the organization of the Public Health Service, an address by Secretary of State Charles E. Hughes, visits to the Army Medical School and the Navy Medical School, the Venereal Disease Clinic of the District of Columbia and to the Hygienic Laboratory and Children's Bureau. Following the observation of national health agencies at Washington, September 22, the delegation of visitors will separate into three groups, one proceeding to Virginia, another to North Carolina and a third to Alabama, where for about three weeks, they will observe and study state and local health departments. Richmond, Va., Raleigh, N. C., and Montgomery, Ala., are the southern cities selected for study. The groups will proceed thence to Massachusetts, New York and Pennsylvania. Syracuse, N. Y., Allentown, Pa., and one of the smaller cities of Massachusetts (yet to be designated) will be visited for a short period. Thereafter, visits will be made to New York, Boston and Philadelphia. The plans call for a reassembling of the entire delegation in Washington late in November for a final conference. The delegation is accompanied by an English physician, Dr. Norman V. Lothian, of the health section, League of Nations, Geneva, Switzerland.

Commanding Officer at Veterans' Hospital Transferred

Col. Robert H. Stanley, U. S. Public Health Service, commanding officer of the negro veterans' hospital at Tuskegee, Ala., has been relieved from duty at that place and ordered to the federal hospital at Fort Bayard, N. M.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 1, 1923.

The Decline of Chlorosis

In *Guy's Hospital Reports,* Dr. J. M. H. Campbell has shown by statistics that an enormous decline has taken place in the incidence of chlorosis, not only in this country but also in others. At Guy's Hospital, chlorosis has been separately indexed since 1888, so that its yearly incidence can be judged by the number of patients admitted. The statistics of some other great hospitals, London and provincial, were also examined. The combined result shows a steady decline since 1903. Very little, if any, of the decrease can be accounted for by changes in the use of the word chlorosis, or by improved methods of diagnosis. In 1916, the number of cases was only half the number in 1910, and less than quarter of those in 1903. From 1899 to 1903 there was a small increase, which was balanced by the decrease from 1903-1906. At the Massachusetts General Hospital, Cabot has shown a similar drop, which was most marked in 1900-1902, just before the beginning of the English drop. A similar fall has been recorded in Sweden and Finland, in which countries the disease diminished rapidly at some time between 1900 and 1902, then more slowly, and almost disappeared about 1912-1916. There is good evidence that improved conditions of factory life and domestic service are the main causes of the decrease. Probably these act by giving more opportunities for fresh air and exercise. The evidence is that chlorosis is only an exaggeration of a normal change that occurs in the blood of girls at puberty. From 14 to 16 there has been found in them a sudden sharp drop in the specific gravity of the blood, from 1.050 to 1.041, at which point it remains until the age of 22. In chlorosis, the drop is much greater than normal. The tendency to anemia at puberty is well known. As all the other changes of puberty depend on the internal secretion of the ovary, it seems that chlorosis depends on the same cause.

Metal Grinding and Pulmonary Disease

The home office has issued an important report by one of its medical inspectors, Dr. E. L. Middleton, on the effects of grinding metals and similar processes. Among the workers, a diminution of chest expansion, not due to age, was found to result from inhalation of the dust. This was greatest in those exposed to silica dust. The diseases resulting are discussed under the headings of tuberculosis, bronchial catarrh, bronchitis and pulmonary catarrh. Evidence of tuberculosis was found in 7 per cent. of wet sandstone hand grinders (who are thus especially exposed to silica dust) as compared with 2.76 for all other groups of workers. Pulmonary tuberculosis, associated with dust exposure, produced a high proportion of victims late in life. Thus, while the highest death rate from the disease for males in Sheffield was 40, that for Sheffield grinders and cutlers was about 50. Those affected showed signs of fibrosis of the silicotic type. Catarrh confined to the larger bronchi, on the other hand, was slightly more prevalent among glazers and dressers exposed to irritating dust with a low silica content. Chronic bronchitis followed established bronchial catarrh, and in glazers and dressers it was associated with a different type of fibrosis from that caused by silica dust—a type originating around the larger air passages, in distinction to silicotic fibrosis, which originates in the alveolar areas. Pulmonary catarrh, distinguished by cough and "tightness on the chest," was a sequel to fibrosis. It was peculiar to silicosis and had a bad prognosis. Fibrosis, bronchitis and pulmonary catarrh represented silicosis and predisposed to tuberculosis, but might progress to a fatal issue without that complication. Bronchial catarrh and bronchitis, with interstitial fibroses, and no peculiar predisposition to tuberculosis, formed a second type of pneumonoconiosis, which follows inhalation of irritant but nontoxic dusts, such as those composed of emery and other oxids of aluminum and silicon carbid. Grindstones are now giving place to manufactured wheels, which generate far less dust and are not composed of silica, to the advantage of the workers.

The British Journal of Anaesthesia

In these days, every specialty into which medicine is split seems to require its own journal. The last to start a journal in this country are the anesthetists. The first number of the *British Journal of Anaesthesia* has just appeared. The promoters include the leading anesthetists of this country and hope to make the scope of the journal extend over the whole British empire. The first number opens with a historical article by Sir D'Arcy Power. An important article on the use of anesthetics in combination, by E. P. Donovan and J. T. Gwathmey, follows. W. J. McCardie discusses bronchopulmonary complications following anesthesia, J. Blomfield, sacral analgesia, and C. Langton Hewer, new anesthetics. The number closes with full abstracts and bibliography of current literature of anesthetics. The journal is a quarterly, and the annual subscription is $10. The publishers are Sherratt and Hughes, Manchester. It is scarcely necessary to say that the magazine should prove most useful to all interested in anesthetics.

A National Pathologic Museum

In a letter to the *Lancet,* a pathologist, Dr. E. H. Shaw, urges the establishment of a national pathologic museum, to contain examples of every disease of which specimens can be obtained, especially microscopic sections of the different tissues. The specimens should be fully described and accompanied by clinical histories, so that pathologists might turn to them for guidance. The attention now being devoted to

the cancer problem leads Dr. Shaw to suggest that the histologic side should be more widely and extensively studied. He finds that the histologic structure of tumors varies so much that it is difficult to follow them and keep them in mind. The great majority of specimens of malignant growth can be easily recognized, but there is a minority that offers great difficulty. Such are very early growths and malignant changes occurring in a primary innocent tumor. Specimens of these would form valuable material for recognizing cancer in its earliest stage and for the training of pathologists. when in difficulty, a pathologist might turn to them for guidance.

Life Assurance and Welfare Work

The Wesleyan General Assurance Society, which was one of the offices which recently announced a scheme of periodic medical examination of policyholders, has now inaugurated a health service bureau to carry out an extensive program of welfare work. This scheme is intended to supplement, not to replace, the existing agencies operating for the same purpose. The work of the bureau will include the preparation and distribution of literature bearing on personal and civic hygiene, the rudiments of health and the prevention of disease. Machinery will be set up for the study of morbidity and mortality statistics, and periodic health surveys will be made. Whatever will promote health and longer life will be within the range of the service. The society hopes that its efforts will merit the attention of health officers all over the country, and that it will be permitted to render such assistance to them and to the ministry of health as lies within its powers. The society has direct relations with nearly two million policyholders, whose homes it is called on to visit for the collection of premiums, in most cases, weekly. It holds that actuarial research indicates that the cost of health and welfare work will be abundantly justified by the saving of mortality. But it is also "actuated by the desire to render a very real service to the whole community."

PARIS

(From Our Regular Correspondent)

Aug. 31, 1923.

Use of White Lead Paints

The international conference of labor, held at Geneva in 1921, adopted the draft for an international agreement concerning the use of white lead paints. Up to the present time, this draft agreement has not been ratified by the French parliament. M. Frois has recently presented to the Société de médecine publique a communication on the subject, from which it appears that, from certain points of view, the measures adopted by France are more efficacious than those proposed by the above mentioned draft agreement. This is true both as regards the prohibited products and the supervised trades.

In France, white lead, lead-containing linseed oil, and all specialties containing white lead, are prohibited. The Geneva draft agreement would prohibit white lead and lead sulphate but tolerates the use of white pigments containing a maximum of 2 per cent. of metallic lead. The prohibition in France includes all purposes for which white lead paints are used by decorators—both interior and exterior decoration of buildings. The international draft agreement prohibits the use of white lead paints only for the interior of buildings, and, by way of exception, permits their use in railway stations and in certain industrial establishments, on the ground that they are indispensable.

However, our labor legislation would be improved if it were reinforced at certain points; for instance, by the adoption of the prohibition of lead sulphate on the same basis as white lead. Although lead sulphate is less toxic than white lead, there is no good reason for substituting it for white lead, either wholly or in part, in the manufacture of paints. But the ratification of the Geneva draft is eminently desirable because it broadens the scope of the protection, which is much greater than is at present enforced in France. Our labor laws afford protection, in the matter of hygiene and safety during work, only to workmen who are working under an employer. No protection is afforded workmen or master painters who work independently, nor even to members of a family working under the authority of the father, the mother or a guardian, except when the work is accomplished by the aid of a steam-boiler or a mechanical motor, or when the industry is classed among dangerous occupations, which is not the case here. Then again, the use of white lead by independent painters, and this is especially frequent in rural districts, entails unfair competition and creates bad feeling between contractors who cannot legally use white lead and the man who can; this puts a premium on fraud from which the health of the workmen suffers. At the present time, the presence of a keg of white lead in a paint shop where several workmen are employed constitutes merely a presumption of fraud, since the employer can always claim that he has it merely for his personal use. Finally, when a wall is covered with white lead paint, whether it was applied by workmen or by the employer himself, there is no means of knowing when some one will scrape this surface with its toxic coating. It is possible that a workman will thus become the victim of a serious intoxication. All these contingencies are rendered impossible by the international draft agreement, since, according to the terms of the draft, the prohibition applies to the use of white lead and lead sulphate in general, without specifying that the prohibition applies only to hired workmen. The prohibition will therefore affect not only contractors and master painters who use the paint themselves but also workmen who may be working on their own account.

In view of the facts as here set forth, the Société de médecine publique unanimously adopted a resolution urging parliament to ratify the draft agreement concerning the use of white lead paints on or in buildings, but with the understanding that the adoption of this agreement shall in no wise impair the application of the preventive measures already prescribed in France by the *Code du travail* (labor code) with reference to the use of lead-containing products, and more particularly, white lead.

The Association of Friends of Children's Hospitals

The lowering of the birth rate is not the only factor that plays a part in the depopulation of France; the high child mortality must also be taken into account. About 140,000 children die annually, and at least 80,000 of these could be saved if proper hygienic methods and a proper regimen were employed. Bottle feeding and separation of the infant from the mother are the principal causes of mortality in early childhood. Then again, prolonged hospitalization of children is pernicious. Young convalescing children do not find in the hospital the conditions necessary for rapid recovery. What they need is country life under good hygienic conditions.

In order to remedy present conditions, pediatricians, heads of services of the Paris hospitals, have formed an association which has taken the name of "Les amis des hôpitaux d'enfants" (friends of children's hospitals). Its purpose is to aid all children found in, or that have been in contact with, the hospitals of Paris, and more particularly, to encourage breast feeding by the mother by all possible means, especially by facilitating the employment of mothers under conditions such as will make it possible for them to perform remunerative work; to place infants who are deprived of breast feeding under the care of societies that will be able,

under medical supervision, to assure them the necessary conditions for their regular growth; to place convalescent children where they will find, under medical supervision, good moral and hygienic conditions; to see to it that the services of children's hospitals are provided with a sufficient number of social workers to superintend in the homes the application of treatment prescribed by the physicians, after the children are dismissed from the hospital, and to see that the mothers and children enjoy all the advantages offered by the child welfare societies. The association will publish bulletins, pamphlets, documents and memoirs, organize lectures and lecture courses, motion picture exhibits, the installation of museums and exhibits, and the allotment and distribution of gratuities, pensions, rewards, prizes, etc. It may also aid in the establishment, development and support of agencies founded for similar ends, by annual subventions or single gifts. The office of the secretary is: 19, rue de Vienne, Paris-8e.

Chronic Intermittent Albuminuria in Young Soldiers

In making systematic examinations of the urine of recruits just before enrolment, a military physician, Dr. Tamalet, was surprised at the relatively large number of men with albuminuria. The percentage observed in the garrison regiments at Troyes was 4. It is probable that the percentage in other garrisons is about the same. This emphasizes the importance of the early detection of these latent cases of albuminuria, for it enables physicians to observe these subjects in the hospital and to decide on their fitness for service during the first sixty days after enrolment.

Of twenty-three such cases of albuminuria observed by Tamalet not one subject was aware that he had albuminuria. Not a single recruit had called the attention of the regimental physician to his state of health, and it was only the routine examination of the urine, made at the time of the enrolment, that revealed the presence of albumin. Almost all these recruits were apparently robust, the majority of them being farmers. Their history might be summed up somewhat as follows: A slight attack of influenza in 1918 or 1919; no previous scarlet fever, diphtheria or other grave toxi-infection; no venereal disease; no digestive disturbances. The urine had never been examined before their enrolment in the regiment. The council of revision (the exemption board in France) had declared them "fit for armed services."

Tamalet emphasizes the fact that these latent types of albuminuria, that exist unknown to the subject, can be studied only in the hospital, where hourly urinalysis and tests of renal function show, as a rule, that it is a chronic intermittent albuminuria associated, in about 50 per cent. of the cases, with disturbances in the elimination of methylene blue; occasionally, slight arterial hypertension, without pathologic azotemia or retention of chlorids, is present. These cases of intermittent albuminuria, which appear often to be sequelae of influenza, may be due to a renal deficiency, an early nephritis or to defective absorption of alimentary proteins, entailing the entrance of heterogenous albumins into the blood stream. They should be regarded as possibly a premonition of nephritis that will occur sooner or later, and this possible outcome should dictate the medicolegal attitude to be taken toward these subjects. The best method of disposing of their cases is to place them on the suspended list, by reason of the hardships imposed on the state by the act of March 31, 1919, with respect to pensions for disability.

Inquiry Into the "Crèches"

There are, in France, many types of establishment for the care of babies. The "crèches" (nurseries), are establishments which take care of babies between the ages of 1 month and 3 years during the day, and return them to their mothers in the evening. The "pouponnières" (baby homes) give both night and day care. The "chambres d'allaitement" (milk stations) are in connection with a commercial or industrial organization and take care of breast fed babies only during the working hours of the mother. Finally, the "garderies" (protective agencies) supervise children of school age outside class hours.

The crèches are managed under regulations that are more than 25 years old and are greatly in need of modification. The League for the Prevention of Infant Mortality has taken up the study of model regulations which, while the league could not enforce them, might serve as a guide to administrators of these institutions. Dr. Clotilde Mulon, an investigator for the committee appointed to draw up these regulations, sent a questionnaire to every crèche in France with the object of compiling a set of files for the committee, and with the hope of suggesting certain improvements to the institutions themselves. To 400 letters sent out only eighty-nine answers were received—too small a proportion—which denotes a regrettable indifference on the part of three fourths of the directors. This inquiry proves that the inefficiency of the crèches has been increased by difficulties growing out of the war. It confirms the criticisms already made concerning these institutions: insufficiency both in quantity and in quality of personnel (Variot); lack of active interest on the part of the physician; numerous infections (Marfan, Porak, and others); frequency of rickets. In order to diminish the mortality and morbidity among the babies cared for in these institutions, Madame Mulon recommends that medical inspections be made daily, not by a rotation of physicians but by one physician, who should be paid and held responsible for the sanitary condition of the institution. The physician should have a voice in the administration of the crèche, especially in regard to the selection and development of the personnel and in imposing penalties for infractions of rules. The nursing staff should be composed of women who have received technical instruction in puericulture. The milk should be sterilized in the morning in the nursing bottles, according to the method of Soxhlet as simplified recently by Renault (taken out of the water before it commences to boil). The rubber nipples should not be kept in sterile water, as this favors the growth of bacteria, but should be cleaned after each feeding, dried, and placed in covered receptacles, and should be steeped for two minutes in boiling water before using. The search for contagious diseases in the stage of incubation should be systematically made every day by a directress specially trained by a course in a children's hospital and every doubtful case should be immediately isolated until the arrival of the physician. An isolation ward for ten children should be compulsory in every crèche.

To obtain these reforms promptly and to aid those crèches which are anxious to improve, a subsidy should be given to all that observe the elementary rules of caution for the safeguarding of the infants.

Decrease of Alcoholism Among the Labor Population of the North

The ministry of labor has published an account of the inquiry ordered by M. Albert Peyronnet, minister of labor, to ascertain whether alcoholism, with its harmful effects on production, good order and regularity of work, was or was not decreasing among the laboring population.

In the Paris region (THE JOURNAL, July 21, 1923, p. 227) the inspectors who had charge of the inquiry paid particular attention to the labor federations and to the heads of large industrial establishments which, by reason of their daily contact with laborers, are in the best position to furnish authoritative opinions. The data collected show that even before the war, but especially since the armistice, there has been considerable improvement in regard to temperance, with con-

sequently greater attention to work on the part of the men and a practical disappearance of the Monday slowup.

These figures are borne out by a noticeable decrease in the sale of liquor and in the number of arrests for drunkenness. The high price of alcohol, the antialcoholic crusade, the development of sports and a more sensible use of holidays are the causes to which this improvement is most often attributed. Some reports showed a large sale of wine in the place of gin and other alcoholic beverages.

The French Pharmacopeia in Alsace and Lorraine

The consulting council of Alsace and Lorraine has just been asked for an opinion on the subject of introducing the French pharmacopeia into the three recovered departments. This introduction has been demanded by the Chamber of Pharmacists. They maintain that those concerned having been placed, by the law of May 28, 1923, on the same footing as their confrères of the interior, it is only just that they submit to the same rules. Among other things, the project abrogates the ordinance of Oct. 27, 1901, relative to the sale of medicine by nonpharmacists, an ordinance that has been much abused. A period of ten years will be allowed all druggists in which to get rid of the stock of articles, the sale of which will be forbidden.

Foundation for the Study of Foreign Sciences and Civilizations

A donation of 500,000 francs has just been made by Madame Albouquerque, widow of the Count of Montfort-Laurito, which makes possible the visits of young Frenchmen to foreign countries for the purpose of studying the sciences and civilizations of those countries. The income from this foundation, which is to be increased by other gifts and legacies, will be used either as gifts or as loans. Gifts and loans will be tendered only to applicants who agree to remain abroad for three years, either in one country or in a group of countries that have a similar civilization. An annual report will be furnished on the work accomplished, and at the end of the visit a collective study will be published. Candidates must be of French nationality, under 30 years of age, and must possess a diploma or university degree such as a degree in law, letters, sciences or medicine or a diploma in pharmacy.

Death of Dr. P. L. Boulloche

Dr. Pierre-Louis Boulloche, staff physician of the Breton hospital, has just died at the age of 58 years. He was born in Paris, Dec. 3, 1864, and was appointed physician to the Paris hospitals at the age of 33. He devoted his professional studies to diseases of children. He wrote little, and left but one monograph, on "Angina with False Membranes," which appeared in 1892.

ROME

(From Our Regular Correspondent)

Aug. 23, 1923.

Second International Congress of Military Medicine and Pharmacy

In a recent letter (The Journal, July 7, 1923, p. 55) I reported briefly the proceedings of the second International Congress of Military Medicine and Pharmacy, but did not take up the subjects that were discussed.

Evacuation of Sick and Wounded

The following conclusions were reached:

The first essential in the general organization of evacuations is effective collaboration between the general command and the army medical corps. The former should furnish the latter, in addition to necessary information on the military situation, such general aid as is consistent with the situation. The medical corps, in turn, must endeavor to adjust its activities to the military necessities. Admission of physicians to the staffs and participation of the chiefs of the medical corps of large units in the general command are indispensable for carrying out this adjustment.

In order to utilize common resources more fully, to consider each other's needs, and to harmonize methods and principles of action, close contact must be maintained between the medical unit at the front and the medical unit of the territorial base.

In the general organization it is vitally important to harmonize the technical medical needs and the military necessities. The technical needs include: consideration of the factors concerned in the evolution of wounds and diseases; the bearing that these factors have on the establishment and special subdivision of the sanitary corps for the various lines from the front to the base, on the assignment of duties and the specialized training of the technical personnel, and on the organization of the machinery for evacuation and its functioning.

The appointment of well qualified technical advisers to the chiefs of the medical units, not only of those with the armies in the field but also of those at the base, will facilitate greatly the planning and securing of technical needs.

The care of the wounded and of the army in general requires foresight, ample personnel and abundant equipment of high quality to insure rapidity of transportation and evacuation with early medical attention and treatment under all circumstances. The need to improve and develop means of transportation of all kinds—on land, at sea and in the air—cannot be too strongly emphasized.

It is desirable that nations endeavor to establish uniformity in the essential characteristics of the means of transportation so that, when necessity arises, parts may be interchangeable.

Cooperation Between Military and Civil Authorities

Close cooperation between civil and military sanitary authorities (the form of collaboration will vary in the different countries) is necessary in order to prosecute the ideal of securing a strong, healthy population of sturdy citizens and stalwart soldiers.

In the interest of public health and of military solidarity, systematic inspection of school children should be organized, in order to discover and correct physical defects. The records thus collected would be the beginning of a sanitary history, which young men would present when examined for military service.

The war furnished a unique opportunity for experimentation in prophylaxis; in fact, it may be said that the organization of the army provides a much more favorable field of observation than civil life.

In the prevention of venereal disease, continence should always be recommended; present methods of venereal prophylaxis do not offer absolute protection. It is important that the greatest care and attention be given to the conditions under which the soldier lives, not only as regards lodging and the performance of military duties, but also with respect to the disposition of leisure time, the games and sports that are accessible (recreation halls).

The soldier should be instructed on the menace of venereal disease by means of tracts, pamphlets, illustrated lectures and motion pictures. He should be taught the principles of venereal prophylaxis (more particularly, individual prophylaxis), but the fact should be emphasized that the means employed are not infallible. All means should be employed to secure an early diagnosis, and complete curative treatment should always be instituted as soon as possible, incomplete or inadequate treatment being a potent cause of distribution of the disease.

As regards tuberculosis, all agencies that have undertaken properly planned campaigns against the disease should be recognized and encouraged and the military authorities should cooperate with them. Investigations into antituberculosis inoculation open up interesting vistas of the future.

In discussing vaccines and serums, it was pointed out that, in addition to smallpox vaccination, the value of which has long been established, the efficacy of antityphoid, antiparatyphoid and anticholera vaccines, both in prevention and as an aid in treatment, has been clearly demonstrated. Vaccinations against bacillary dysentery and influenza, on the other hand, have not yet proved of value. Antitetanic and antidysenteric serums have been found effective, the former as a preventive, the latter as a curative agent; but as yet no favorable results have been secured with the serum of gas gangrene, except in the French and Belgian armies.

With respect to mental diseases, it was emphasized that the study of psychiatric cases by army physicians deserves special attention, for the war brought this field of pathology into prominence. Psychiatric examinations, preferably during a period of observation following enrolment, render it possible to eliminate from the service the mentally abnormal and defective. The large majority of epileptics and psychoneurotics in whom the symptoms of disease develop under the influence of military activity can also be detected.

DISINFECTION AND DISINFESTATION

These conclusions were recorded:

Disinfection can be accomplished by natural means or by the use of mechanical, physical or chemical procedures. In carrying out disinfection, no set of rules should be followed too closely. Different conditions will require slightly different adaptations. Too great importance cannot be attached to continued disinfection and to the most punctilious cleanliness in sickrooms. Practically, it is eminently desirable to select certain standard disinfectants in order that comparisons of results may be made. For disinfestation, the methods that give the best results are those that employ heat, especially dry heat. Of the gases, chloropicrin and hydrocyanic acid have been found very efficacious. However, hydrocyanic acid is highly toxic, and should never be used without adequate precautions, and then only by a specially trained personnel under the most rigorous supervision. The method of neutralization with formaldehyd, recommended by Martinez Roca, should be used whenever possible. The personnel to whom the work of disinfection and disinfestation is entrusted should be specially trained. For the army, special detachments for disinfection and disinfestation are of great importance.

TREATMENT OF THORACOPULMONARY WOUNDS

In closed thoracopulmonary wounds, caused by small projectiles (bullets or shell fragments), a waiting policy should ordinarily be pursued, provided there is little or no hemothorax, and no hemoptysis is observed. The production of an artificial pneumothorax constitutes a real progress in the therapy of these conditions. Prophylactic surgical treatment is always indicated in exposed lesions of the thoracic wall, with or without rib fractures. Immediate opening of the cavity is always indicated in open pneumothorax to stop bleeding and ward off infection. On the other hand, in closed wounds with a pneumothorax, hemostasis usually takes place spontaneously, but immediate opening may be indicated in cases of persistent hemoptysis or progressive hemothorax, particularly if there is retention of a projectile and if the size of the projectile is greater than that of a shell splinter. As for pericardiocardiac wounds, immediate operation is rarely indicated to stop bleeding; it is more frequently indicated to prevent infection. In the zone of hostilities as well as at the base, special services for the treatment of thoracic wounds during the secondary and remote periods are necessary. Either during the secondary or the remote period projectiles remaining in the pleura or the lung, or in close proximity to large vessels, should be removed. Indications for the extraction of pericardiocardiac projectiles should be subordinated to the study of functional circulatory symptoms. Pulmonary tuberculosis is a rare complication of thoracic wounds. However, these may cause a latent focus to flare up or may aggravate a specific process already in evolution.

CHEMICAL LABORATORIES IN THE ARMY

The necessity for controlling water and food supplies for the army, for carrying out clinical investigations, and for conducting analyses required by the high command justifies the organization by the army medical corps of chemical laboratories with equipment and methods adapted to the needs of the armies in the field. The methods to be used by chemical laboratories in the field should be accurate, rapid and simple of execution. The selection of such methods, in keeping with progress in science, should constitute one of the most important peace-time considerations of military pharmacy. The methods found especially applicable for field service should be recorded in a special pharmaceutic formulary. In view of the importance of chemical research in the army, the methods selected or elaborated by the pharmaceutic services should be discussed at future international congresses of military medicine and pharmacy.

DATE OF THE NEXT MEETING

At its final session, the International Congress of Military Medicine and Pharmacy decided to request France to convene the third congress in 1925, under the same rules as the first and second congresses, held, respectively, at Brussels in 1921 and at Rome in 1923.

The questions placed on the agenda for the 1925 meeting are: technical specialization as the basis for the functioning of the army medical corps; its application to the different departments, with communications from France and Ireland; the selection of the personnel, with communications from France, Poland and Argentina; the etiology and treatment of traumatic arthritis and its sequelae, with papers from France and Belgium; and methods for the analysis of dressings and suture materials, with reports from France and Roumania.

BERLIN

(From Our Regular Correspondent)

Aug. 25, 1923.

The Birth Rate and the Excess of Births Over Deaths

Immediately after the war, a strong reaction set in as regards the factors affecting vital statistics. The years 1919 and 1920 were record years in Germany for marriages. Also the birth rate returned to that of prewar times, although no records were broken as was the case after the war of 1870. The most surprising manifestation was that the mortality fell rapidly. This was probably due, in the main, to the changed age distribution of the inhabitants, though doubtless also affected by the fact that, during the food blockade, the weakest among the population had died. During the last two years, the immediate results of the war have been counterbalanced, to a great extent, so that now it may be said that vital statistics in Germany present an approximately normal aspect. The year 1922, concerning which the final results have recently been published by the federal statistical bureau in the biweekly *Wirtschaft und Statistik*, shows considerable change over the previous year. The number of marriages is still 50 per cent. higher than before the war, but, as compared with the previous year, the number per thousand inhabitants dropped from 11.8

to 11.1. The number of marriages for the whole German empire, exclusive of Mecklenburg, was 673,652. The number of births scarcely corresponds to the large number of marriages. In 1913 there were 28.5 births per thousand inhabitants; in 1921 there were 26.1 births, and in 1922 only 23.6 births, which includes stillbirths. The lowering of the birth rate, as against prewar times, is most marked in the large cities. For instance, the birth rate for Berlin fell from 20.2 in 1913 to 14.6 in 1921 and to 12.3 in 1922. But also the predominantly rural provinces show a decrease in the birth rate. Thus, last year, the birth rate for East Prussia sank from 30.6 to 27.8; for Pomerania, from 28.6 to 26.1; for Bavaria, from 27.7 to 25.6; for Wurttemberg, from 24.2 to 21.7, per thousand inhabitants. The decrease in the industrial regions, for example, in Silesia, Saxony, Thuringia and Anhalt, is especially marked. Not only has the birth rate decreased with reference to the total population, but Germany showed last year also a marked absolute decrease. The number of living births in 1921 was 1,560,447, and in 1922 only 1,380,885, which was doubtless due in great measure to the cession of East Upper Silesia. However, in spite of this heavy drop in the birth rate, there was a large excess of births over deaths for Germany as a whole. That is due to the fact that, since the war, we have had a comparatively low mortality. The death rate last year was 15.1, which, compared with 14.7 for 1921 (a record year), showed a retrograde movement, although it was lower than the rate just previous to the war. The total number of deaths (exclusive of stillbirths) was 865,193. This gives an excess of births over deaths of 513,692, or 8.5 for each thousand inhabitants. This is, to be sure, a decrease of 33 per cent. as compared with the years just previous to the war. But it should not be forgotten that the tendency toward a decrease in the birth rate became manifest soon after 1880 and by the close of the century had become more marked, so that it may be said that the retrograde movement since the close of the war is merely a continuation of the manifestations already apparent in 1914.

The Status of School Psychologists

A school psychologist was recently appointed for the schools of Mannheim, a manufacturing town in northern Baden, with a population of around 200,000. His duties, which he will carry out under the supervision of the institute for psychology and pedagogics in the *Handelshochschule*, will include the collection of data that will be useful for purposes of instruction; observation of pupils; examination of pupils; collaboration in the solution of important psychologic and pedagogic problems, and aid and advice to be rendered the instructional corps in the study and judgment of peculiar individuals among the pupils.

Effect of Bad Economic Conditions on Public Health

The financial straits of our people finds its expression in other ways than in the increase in the number and gravity of the cases of tuberculosis and in the undernutrition of infants. It is regrettable to note that the number of suicides and attempted suicides is also on the increase. In the month of June, according to the official report, 151 cases were announced from Berlin alone. In Dresden there were fifteen suicides and twenty-six attempted suicides. In medical circles as well, similar cases have been reported. Repeatedly, deaths have been announced as due to lack of food.

The Children in Large Families

The economic distress is naturally felt most in large families, especially in the cities, and particularly when the children have not yet become wage-earners. For this reason, in many places the large families have combined and have adopted a communal arrangement in which, while agreeing to take a neutral attitude toward political and religious questions, they have made common cause of their social and economic interests. These *Vereinigungen der Kinderreichen* (unions or clubs of large families), the number of which now exceeds 300, have formed a league for the protection of large families. In view of this fact, Prof. Eugen Schlesinger of Frankfort-on-the-Main, a well known pediatrician and social hygienist, has taken occasion to investigate the conditions prevailing in these large families, not only from a hygienic but also from a social and intellectual point of view. The results of his researches, which he has published in the *Archiv für Kinderheilkunde*, he has summed up thus: In the *Volksschulen* (the nonclassical common schools) from 35 to 50 per cent. of the pupils, the percentage varying with the social status of the parents, come from large families of four or more children. In the schools of middle grade and in the secondary schools the percentage is from 16 to 20. (From 10 to 25 per cent. belong in the "only child" category.) More than 50 per cent. of the children of large families are of school age. The grown-up sons and daughters who have finished school constitute the second largest number, while the young children under school age and the infants are the fewest in number, though more in need of welfare assistance than the other two classes. Child mortality in families of four children amounts to 15 per cent. of living births; in families with five or six children, 25 per cent.; in families with seven children, 32 per cent., and in families of ten and more children the mortality is usually above 40 per cent., and often more than 50 per cent. This high mortality affects especially the children under 6, which inures to the advantage of the younger and youngest infants. The highest point of development, especially from the point of view of general bodily constitution, is reached, on the average, by the second and third child, although the fourth child may be only slightly inferior, whereas conditions as affecting the children under 6 and the younger school children become gradually worse. The new-born and the older infants in large families are well developed and hearty, as a rule, unless the number of births is exceedingly large. The weight and essential measurements of the new-born increase in direct proportion to the age of the mother and the number of births up to the last and highest group, and up to the highest number of births from 75 to 80 per cent. of the infants are breast fed, without any noticeable diminution in the milk supply of the mothers. But, in the second half year in the lives of the children born late, as compared with those born during the early part of the period of fertility, in large families, a weakening of development is noticeable, and from the third to the sixth year a progressive downward trend of bodily health often becomes manifest. In many children in large families the evidences of retarded development may be especially noted in the sixth and seventh year, about the time they enter school. A few years later, a partial recovery takes place; in fact, in many instances the lost ground is regained in a comparatively short time. The children of the lower middle class, and especially the school children of the families that are under the care of the welfare committee for large families, at present constitute an exception. These children may be said to be far below par, though possibly the juveniles of these families are in a still worse condition, for 18 per cent. of them do not become wage-earners on leaving school. But, as a rule, this retardation is compensated during the following years. Even though, in large families of children, they may present, during school age, approximately the same physical development, from the intellectual side, judged from their accomplishments in school, a weakening tendency will often be noted toward the end of the series. This tendency

often manifests itself in a lack of home training, as evidenced by weaknesses of character; in the juveniles, especially, a feeling of oneness with the family and a healthy community spirit are wanting.

Distribution of Human Milk Through the Infant Welfare Centers

As I reported in a previous letter, Dr. Klose, the director of an infant welfare center, was induced by the scarcity and the high price of cow's milk in 1920 to use, as supplementary aid, collected human milk for the feeding of weakly and sick infants. An assistant of Dr. Klose (in the little town of Wittenberge) reported recently in the *Deutsche medizinische Wochenschrift* on the experiences with the method during the past three years. During these three years, 248 liters of human milk was collected. In passing judgment on what may seem to be an inconsiderable amount, it should be remembered that the individual contributions were frequently no more than 100 gm. The 248 liters was collected from thirty-five mothers. As will be readily understood, it was often very difficult and sometimes impossible to prevail upon women to contribute their surplus of milk, not infrequently owing to the objections raised by their husbands. It goes without saying that the necessary precautions in the selection of mothers was taken, especially women suspected of tuberculosis or syphilis being rejected. The price paid for human milk was only twice that of cow's milk, it being feared that, if more were paid, there might be a temptation to adulterate the contribution. The forty-six children that were fed with the milk thus collected thrived wonderfully well, as could be easily demonstrated; and particularly children with cholera infantum and pylorospasm, grave atrophy and progressive tuberculosis, and also premature infants, were much benefited by its use.

Marriages

IRA LUTHER HOUGHTON to Miss Alice Estelle Stearns, both of Baltimore, at Fredericksburg, Va., September 4.

PAUL MELANCHTON VOGT, Reading, Pa., to Miss Ellen Rebecca Rhoads of Bogertown, Pa., September 1.

ERNEST EDWARD KESSLER, Los Angeles, to Miss Simona Laborin of Hermosillo, Sonora, Mexico, July 8.

ALFRED HARVEY BLACK, Thomaston, Ga., to Mrs. Obie McKenzie Duncan of Montezuma, recently.

RAYMOND LORRAINE JEFFERY, Seattle, to Miss Margaret Hickman of Chariton, Iowa, June 21.

GEORGE W. STOLER to Miss Florence Lebzelter, both of Lancaster, Pa., September 19.

ELMER T. MCGAUGH, Richmond, Mo., to Miss Nan Jo Stalcup of Chicago, June 14.

ALEXIS T. TELFORD to Miss Ida E. Markman, both of Olney, Ill., June 30.

Deaths

Charles Frederick Millspaugh, Chicago, died, September 15, at the Presbyterian Hospital, of pneumonia. Born at Ithaca, N. Y., June 20, 1854, Dr. Millspaugh graduated from the New York Homeopathic Medical College, New York, 1881, and practiced medicine in his native state for ten years. He was botanist at the University of West Virginia from 1891 to 1893, and curator of the department of botany at the Field Museum of Natural History, Chicago, from 1894 until the time of his death. He was professorial lecturer in economic botany, University of Chicago, since 1895. Dr. Millspaugh explored in Mexico, Brazil, the West Indies and the Bahama Islands. He was author of "American Medical Plants" and many other works.

William Thomas Patton ✙ New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1908; professor of otology, laryngology and rhinology, Loyola Post-Graduate School of Medicine; on the staffs of the Charity and Presbyterian hospitals; aged 38; died, September 4, at Rochester, Minn.

Joseph P. Porth ✙ Jefferson City, Mo.; St. Louis Medical College, 1887; formerly mayor of Jefferson City; at one time member of the state legislature and city council; served as county physician for many years; aged 58; died, August 30, of heart disease.

James Ferlando Graham, Chicago; Medical Department of the University of the City of New York, 1880; member of the Illinois State Medical Society; Civil War veteran; aged 75; died, September 14, of arteriosclerosis and interstitial nephritis.

Columbus S. Jenkins, Tellico Plains, Tenn.; Tennessee Medical College, Knoxville, 1900; member of the Tennessee State Medical Association; mayor of Tellico Plains; aged 50; died suddenly, August 29, at the Knoxville General Hospital.

George Herman Wellbrook, Dayton, Ohio; University of Virginia Department of Medicine, Charlottesville, 1894; served in the M. C., U. S. Army, during the World War; aged 48; was found dead in bed, August 30, of heart disease.

Jacob Lewis Arbogast, Sacramento, Calif.; Cooper Medical College, San Francisco, 1899; aged 56; died, September 4, at the Sacramento Hospital, of bullet wounds received, when shot by a bandit.

Herbert Carl Waite, Columbus, Ohio; Cleveland Homeopathic Medical College, 1898; served in the M. C., U. S. Army, during the World War; aged 51; died, August 30.

William Henry Newlon ✙ Fort Madison, Iowa; College of Physicians and Surgeons, Keokuk, 1890; aged 61; died, August 30, at the home of his daughter in Berkeley, Calif.

Oliver D. Robinson ✙ Georgetown, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1884; aged 60; died, September 2, of carcinoma of the bladder.

John Henry Bowen, Dolgeville, N. Y.; Long Island College Hospital, Brooklyn, 1883; also a pharmacist; aged 75; died, September 1, following a long illness.

Charles Heyer, St. Louis; University of Giessen, Germany, 1863; member of the Missouri State Medical Association; aged 84; died, August 22, of senility.

Monroe Melvin Knight, Buchanan, Mich.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 69; died, August 28, of bronchopneumonia.

James A. O'Donnell, Baltimore; Johns Hopkins University Medical Department, Baltimore, 1911; aged 37; died, September 7, of bronchopneumonia.

Augustus Walker Maclay, Goshen, N. Y.; Medical Department of the University of the City of New York, 1865; aged 81; died, August 13, of senility.

Eugene A. Whittington, Little Mount, Ky.; University of Louisville Medical Department, 1889; aged 74; died suddenly, August 25, of heart disease.

William W. Rich, Center, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1879; aged 79; died, August 6, following a long illness.

John Milton Latta, Wichita, Kan.; University of Michigan Medical School, Ann Arbor, 1883; aged 70; died, August 25, following a long illness.

Charles John Parsons, Ardoch, Ont., Canada; L.S.A. London, England, 1883; aged 74; was found dead in bed, June 16, of cerebral hemorrhage.

Hiram W. Marsh, Winfield, Kan.; University of Michigan Medical School, Ann Arbor, 1866; aged 89; died, August 27, of senility.

Raymond William Stockwell ✙ Oswego, N. Y.; University of Buffalo Department of Medicine, 1910; aged 39, died, August 27.

Julius J. Hilton, Greensboro, N. C.; University of Maryland School of Medicine, Baltimore, 1886; aged 63; died, August 31.

Vesta M. W. Swarts, Auburn, Ind.; Fort Wayne College of Medicine, 1882; aged 82; died, August 2, of senility.

W. P. Dabney, Combs, Ark. (licensed, Arkansas, 1903); aged 83; died recently, of senility.

Guy M. Canfield ✙ Detroit; Cleveland (Ohio) Medical College, 1894; aged 51; died in June.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

SO-CALLED "IMPROVED" ETHERS

Claim that Pure Ether Has No Anesthetic Properties, Without Foundation

Since the use of ether for anesthesia was demonstrated in 1846, there have been many investigations of its composition in relation to its actions. The generally accepted view has been that the anesthetic action of ether is due to the ether (diethyl oxid) itself, although at various times during the first five decades of its employment assertions were made—without substantiating evidence—that certain impurities enhanced its anesthetic value.

In 1919 Cotton[1] declared that, as a result of certain experiments, ethyl ether, specially purified, "was not a good anesthetic and that real anesthesia could not be obtained unless it [ether] contained some potent synergist." He then announced that he had prepared a superior product, which became known as "Cotton Process Ether."

At that time the exact composition was not given but some time later, the manufacturer who placed the product on the market, E. I. Dupont de Nemours & Co., Inc., stated[2] that the composition was highly refined diethyl oxid, $(C_2H_5)_2O$, plus approximately two volumes of ethylene (C_2H_4), one-half volume of carbon dioxid (CO_2) and 1 per cent. by weight of ethyl alcohol. The firm also signified its intention of submitting the product to the Council on Pharmacy and Chemistry, which it did two years later. Since that time the company, apparently, has endeavored to obtain sufficient evidence for claims of superiority, but so far these have not been presented and confirmation of Cotton's claims is lacking. It is but fair to say that the Dupont company has not been actively "pushing" the product during the past two years.

Wallis and Hewer of England have also recommended a new general anesthetic. They, too, declare[3] that pure ether possesses practically no anesthetic properties. The composition of the Wallis and Hewer product has been vaguely claimed to be purified ether to which is added, in unspecified amounts, a mixture of ketones (identified only as comprising those in the middle of the series) which have been treated previously with carbon dioxid and ethylene. The product has been placed on the market under the name "Ethanesal." It received some endorsement, especially from Dr. H. E. G. Boyle of London who made it the subject of addresses on anesthesia before medical audiences in this country.

The claim that pure ether is devoid of the usual anesthetic attributes seemed so out of accord with the understanding of ether anesthesia that it was not surprising that other investigators took up the problem. Thus it was that over a year ago Bourne and Stehle[4] showed that ether prepared in a way to exclude impurities such as are ordinarily present possesses the usual anesthetic properties. As for "Ethanesal," Henry Robinson[5] states in his recent textbook:

> "I have been unable to discover any advantage possessed by this anesthetic over ether; and in particular I believe that so far from being less liable (as is claimed) to cause vomiting, ethanesal is actually more often followed by vomiting than ether itself. Ethanesal is considerably the more expensive of the two."

Of particular scientific interest is the painstaking investigation recently reported by Dale, Hadfield and King[6] made by them for the purpose of throwing light on the claim that pure ether has little or no anesthetic action. They also report the results of their examination of "Ethanesal." They first made a purified ether—absolute diethyl oxid—by a special method. This ether, which was free from aldehydes, ketones, acids, mercaptans, alcohol and all other known impurities, including ethylene, was first carefully tested in the laboratory on a series of cats. Induction of anesthesia occurred smoothly and with a rapidity at least equal to that normally seen when ordinary good anesthetic ether is administered. Such difference as was observable could be satisfactorily attributed to the smaller amount of pharyngeal and tracheal secretion provoked, the pure ether being distinctly less irritant than most specimens of ether sold for anesthetic purposes. This absence of irritation not only facilitated induction, but enabled deep anesthesia to be maintained with a smaller quantity of the ether. As a result of their experiments, the authors believe that the purer the ether, the more easily and smoothly can anesthesia be induced and maintained.

When this pure ether was used for patients requiring anesthesia with ether for surgical operations, the results, like those obtained in experiments on cats, were decisive in favor of perfectly pure ether. The after-effects were no worse than those usually following anesthetic ether. During the administration the tendency to coughing and salivation appeared to be less than usual. In all cases the surgical anesthesia was complete and no complaint was made of rigidity. These experiments appear to prove beyond doubt that chemically pure ether is an anesthetic, at least as satisfactory and effective for the human subject as the best ethers usually sold for that purpose. In the opinion of these investigators efforts to improve the properties of ether, as an anesthetic for ordinary use, can be most profitably directed to the discovery of methods for rendering and keeping it free from the irritant impurities.

The experiments with "Ethanesal," made by Dale, Hadfield and King, failed to afford any evidence of an anesthetic potency which is not satisfactorily accounted for by that of the purified ether, which is its main constituent. Several samples of "Ethanesal" were submitted to fractionation. The samples contained 95.5 per cent. ether, 4 per cent. of normal butyl alcohol, and 0.5 per cent. of a mixture of ethyl alcohol and an aldehyde, and possibly traces of other substances. This analysis showed a composition which differs from the claims. These differences were called to the attention of the manufacturers of "Ethanesal" who stated that normal butyl alcohol should not be a constituent of "Ethanesal," and that its presence in the samples examined must have been due to an error. The authors claim they are left in a state of complete uncertainty as to whether any of the numerous published clinical observations of the action of "Ethanesal" were carried out with ether containing genuine ketones (as claimed by the manufacturers) or with ether containing normal butyl alcohol (as found by the investigators) of which some portion had been oxidized to butylic aldehyde. Meanwhile, in view of their failure to detect any real difference between the action of "Ethanesal" and that of pure ether (either separated from it, or prepared independently) they feel justified in requiring further proof before admitting that the nature of the added constituent could make any serious difference.

Thus the work of Dale, Hadfield and King gives no support to the statements that pure ether is devoid of anesthetic action, and that the activity in this direction of ordinary ether is due to impurities. On the contrary, their work shows that the anesthetic action of ether is improved by purification. As an anesthetic, the purest ether is the best. Furthermore, the work of these men indicates that there is no evidence to warrant attributing the anesthetic properies of "Ethanesal" to any other constituent than the ether.

The work of Stehle and Bourne in Canada and of Dale and his co-workers in England demonstrates anew that, notwithstanding the claims of the proponents of the so-called improved ethers, the theory of ether anesthesia is still unchanged.

1. Cotton, J. H.: Cotton Process Ether and Ether Analgesia, Am. J. Surg., Anesthesia Supplement, April, 1919, p. 34.
2. Cotton Process Ether, J. A. M. A. **74**: 1474, 1920.
3. Wallis, R. L. McK., and Hewer, C. L.: New General Anesthetic. Its Theory and Practice, Lancet **1**: 1173, 1921.
4. Stehle, R. L., and Bourne, W.: The Anesthetic Properties of Pure Ether, J. A. M. A. **79**: 375, 1922.
5. Robinson, Henry: Hewitt's Anesthetics and Their Administration, New York: Oxford University Press, 1922.
6. Anesthetic Action of Pure Ether, Lancet **1**: 5192 (March 3) 1923.

Development of Tuberculosis.—From infection to first illness, lung tuberculosis is a slowly creeping and insidious thing; between the two incidents there are probably more often years than weeks or months.—A. K. Krause.

Correspondence

MENTAL TESTS FOR MOTORISTS

To the Editor:—In the editorial comment (THE JOURNAL, September 8, p. 835) in which is suggested the devising of standards for drivers of motor vehicles, there occurs a suggestion that seems to me might well be amplified by those who are specializing on psychologic tests. The various works on this subject and particularly the articles in the *Journal of Personnel Research* show that while progress in reliable mental tests is slow, it is, nevertheless, continuous and practically useful in industry. Not only have special tests been devised which show the fitness of persons for particular occupations, but these tests are also being used in practice in the employment departments of a number of the most progressive employers of labor.

The use of special psychologic tests in a few of the most modernized of our civil service departments indicates, as does your comment, the feasibility of extending the same principle to the examination of automobile drivers. The tests that you suggest for eyesight and hearing would, of course, be comparatively simple. The more crucial test of rapid and correct decision in emergencies is one that will undoubtedly require considerable experimental work. This, however, is one of the most important considerations for increased safety in the streets.

Those who are approaching the subject of mental tests from the scientific side could hardly serve society in a better way than to work out and secure the application of such examinations on which would be conditioned the granting of licenses to drivers.

WILLIAM C. EWING, Philadelphia.
Managing Director and Secretary,
The Child Federation.

THE NEED FOR PHYSICIANS IN THE PUBLIC HEALTH FIELD

To the Editor:—The nationwide interest in measures for the improvement of the public health has resulted in the extension and standardization of health organizations and activities generally. In consequence, the number and stability of public health positions have greatly increased in recent years. In fact, this increase has occurred so rapidly that the facilities for the education of sanitarians and scientific workers in the public health field has not kept pace with it, although substantial progress has been made within the last decade in the number of universities giving such instruction.

The conference of officials and eminent specialists in public health education convened by the Surgeon General of the U. S. Public Health Service focused attention on this condition (Future of the Public Health in the United States and the Education of Sanitarians, Public Health Bulletin 124, U. S. P. H. S.), and should result in the institution of short courses of instruction for health officers, physicians and others, as well as in more systematic instruction of undergraduate students by medical schools.

The complex conditions of the recent past have resulted in a shortage of candidates even for positions for which the essential requirements on entrance do not include special sanitary training but a thorough medical training and hospital experience. In some of these positions the successful candidates are assured of subsequent special training for the duties to be performed by them.

In the U. S. Public Health Service, for instance, a number of vacancies now exist for recent graduates of medicine between the ages of 23 and 32. These positions, which are permanent, provide attractive compensation from the beginning, and the opportunities for professional advancement in public health endeavor are excellent.

Within the last three years, 8,841 physicians have graduated from our medical colleges, 4,707 of this number having liberal arts degrees. It would seem that many from among this number would be attracted to the public health field, especially in those positions involving not only general work but also hospital and research work.

J. W. KERR, M.D., Washington, D. C.
Assistant Surgeon General, U. S.
Public Health Service.

"DEVIL'S GRIP"

To the Editor:—I note in THE JOURNAL, September 8, an article entitled "An Epidemic of Mild Fever of Unknown Origin." Apparently it is to all intents and purposes the same disease that I described in THE JOURNAL, May 28, 1921, under the title of "An Unusual Pain Syndrome Associated with the Present Wave of Influenza." Neither of us is correct, because we describe a symptom; yet it seems that the two articles should be coupled for future research.

THOMAS F. REILLY, M.D., New York.

"CONTROL OF OPHTHALMIA NEONATORUM"

To the Editor:—The plea of Dr. F. Park Lewis (THE JOURNAL, September 8, p. 849) is one that should be read by every physician that practices obstetrics. Blindness from ophthalmia neonatorum could and should be prevented. In thirty years' practice I have never had blindness result from this cause. I have always carried in my obstetric bag a solution of silver nitrate, 1 per cent., and never neglect to use it. The state of Illinois now furnishes this solution in beeswax ampules, and there is no excuse for a doctor not having it with him. I know a young woman, now 19 years old, blind from this cause, owing to the neglect of a drunken doctor. I am surprised that this infection occurs in well regulated hospitals as stated in Dr. Lewis' letter. We should have an editorial on this subject.

H. W. SMITH, M.D., Roodhouse, Ill.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INTESTINAL PARASITES

To the Editor:—Please discuss the treatment of the following described intestinal parasites: In size, they are about one-tenth that of a No. 60 sewing thread, from one-fourth to one-half inch in length. Magnified, the heads of a few have three or four thornlike projections. From this I concluded that they are what is described in the books as the thorn headed worm. A woman, aged 54, has been annoyed by them about two years. They have resisted all ordinary treatment so far. The most generally used anthelmintics have been used in large doses supplemented by large enemas of salt or soapy solution, followed by quassia, changed at times to mercuric chlorid, 1: 8,000, with mercurial ointment externally. This treatment has been followed daily for weeks with only partial relief.

M.D., Illinois.

ANSWER.—The description of the worm does not enable us to identify the animal sufficiently, nor are we familiar with any extraordinary treatment for worms, "all ordinary treatment having been used." The worm might be sent to the Department of Parasitology at the University of Illinois for identification.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, October 2-3. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

CALIFORNIA: Sacramento, October 15-18. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, October 2. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

FLORIDA: Tallahassee, October 9-10. Sec., Dr. W. M. Rowlett, Tampa.

GEORGIA: Atlanta, October 9-11. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, October 2. Dir., Mr. Charles Laurenson, Boise.

ILLINOIS: Chicago, October 9-11. Supt. Mr. V. C. Michels, Springfield.

IOWA: Des Moines, September 25-27. Sec., Rodney P. Fagen, State House, Des Moines.

KANSAS: Topeka, October 9. Sec., Dr. Albert S. Ross, Sabetha.

MICHIGAN: Lansing, October 9. Sec., Dr. Beverly D. Harison, 707 Stroh Bldg., Detroit.

MINNESOTA: Minneapolis, October 2-4. Sec., Dr. Thomas S. McDavitt, 539 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, October 3-6. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.

MONTANA: Helena, October 2. Sec., Dr. S. A. Cooney, 205 Power Bldg., Helena.

NEVADA: Carson City, November 5. Sec., Dr. Simeon L. Lee, Carson City.

NEW JERSEY: Trenton, October 16-17. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, October 8-9. Sec., Dr. W. T. Joyner, Roswell.

NEW YORK: New York, Albany, Syracuse, Buffalo, September 24. Sec., Dr. William D. Cutter, Albany.

PORTO RICO: San Juan, October 2. Sec., Dr. Jorge del Toro, 1 Olimpe St., San Juan.

SOUTH CAROLINA: Columbia, November 2. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

UTAH: Salt Lake City, October 2. Dir., Mr. J. T. Hammond, Salt Lake City.

WYOMING: Cheyenne, October 8-10. Sec., Dr. J. D. Shingle, Cheyenne.

Massachusetts March and April Examination

Dr. Charles E. Prior, secretary, Massachusetts Board of Registration in Medicine, reports the oral, written and practical examination held at Boston, March 14-16, 1923. The examination covered 16 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 48 candidates who took the physicians' and surgeons' examination, 28, including 3 osteopaths, passed, and 20, including 2 osteopaths, failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado	(1910) 78.8,	(1912)	83.5
American Medical Missionary College		(1900)	77.9
Tulane University		(1915)	87.5
College of Physicians and Surgeons, Boston		(1920)	77
Harvard University	(1921) 83.6, 85.7,	(1922) 82.6,	86.4
Middlesex College of Medicine and Surgery (1921) 75.2, (1922) 75, 76.1		(1920)	79.1
Tufts College Medical School		(1922)	75, 83.4
University of Michigan Homeo. Medical College		(1914)	76.1
Kansas City University of P. and S., Missouri		(1920)	75
St. Louis College of Physicians and Surgeons		(1921)	75.7, 76
Long Island College Hospital		(1921)	76
Syracuse University College of Medicine		(1920)	85.1
McGill University		(1921)	78.2
University of Jurjev, Russia		(1917)*	75
University of Khakov, Russia		(1921)*	75
University of St. Vladimira, Kief, Russia		(1918)	76.2
Osteopaths		75, 77,	78.8

College	FAILED	Year Grad.	Per Cent.
Chicago Homeopathic Medical College		(1901)	66.2
Maryland Medical College		(1913)	55.9
College of P. and S., Boston		(1916) 71.3, (1918)	72.3
Middlesex College of Medicine and Surgery (1920) 68.5, (1922) 70, 71.9, 72.6			
Grand Rapids Medical College		(1906)	69.5
St. Louis College of Physicians and Surgeons (1920) 68.2, 69.5, (1921) 67.8, (1922) 63.1, 69.8, 70.2, 72.7			
Meharry Medical College		(1921)	66.7
University of Naples, Italy		(1913)*	71.5
Osteopaths			60, 72.9

* Graduation not verified.

Dr. Prior also reports the special written and oral examination held at Boston, April 12, 1923. The examination covered 16 subjects and included 70 questions. An average of 75 per cent. was required to pass. One candidate was examined and passed. The following college was represented:

College	PASSED	Year Grad.	Per Cent.
Columbia Univ. College of Physicians and Surgeons		(1889)	78.8

District of Columbia April Examination

Dr. Edgar P. Copeland, secretary, District of Columbia Board of Medical Supervisors, reports the oral and written examination held at Washington, April 10-12, 1923. The examination covered 16 subjects and included 80 questions. An average of 75 per cent. was required to pass. Eight candidates were examined, all of whom passed. Seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University	(1920) 86.9,	(1922)	80.9
University of Michigan Medical School		(1922)	80
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1917)	79.3
Temple University		(1919)	89.1
University of Pennsylvania		(1892)	77.6
Vanderbilt University		(1916)	85.4
Medical College of Virginia		(1922)	87.2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University	(1908),	(1913)	Alabama
Ensworth Medical College		(1910)	Missouri
University of West Tennessee	(1914, 2) Missouri	(1916)	Tennessee
University of Virginia		(1915)	Virginia

Georgia June Examination

Dr. C. T. Nolan, secretary, Georgia State Board of Medical Examiners, reports the written examination held at Atlanta, June 6-8, 1923. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Sixty-five candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University	(1922) 87, (1923, 50), 89, 89, 89, 90, 90, 90, 90, 91, 91, 91, 91, 92, 92, 92, 92, 92, 92, 92, 92, 93, 93, 93, 93, 93, 93, 93, 93, 94, 94, 94, 94, 94, 94, 94, 94, 94, 95, 95, 95, 95, 95, 96, 96, 96, 97, 97, 97		
University of Michigan Med. School		(1917)	93
Jefferson Med. College		(1921)	96
Meharry Medical College	(1923, 10) 83, 85, 87, 87, 90, 90, 90, 90, 90, 91		
University of Tennessee		(1923, 2)	89, 91

Virginia June Examination

Dr. J. W. Preston, secretary, Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 19-22, 1923. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 59 candidates examined, 57 passed and 2 failed. Twelve candidates were licensed by reciprocity and four candidates were licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Medical College of Alabama		(1894)	83
George Washington University		(1922)	85
Johns Hopkins University		(1923)	82.5
Hahnemann Med. Coll. and Hosp. of Philadelphia		(1923, 2)	92, 93.1
Jefferson College Med. Dept.		(1923)	91.9
University of Pennsylvania		(1923)	89.5
Meharry Medical Collge		(1923)	80.2
University of Nashville Med. Dept.		(1906)	78.2
Medical College of Virginia (1923, 34) 76.4, 81, 82, 83.5, 84, 85, 85, 86, 86, 86, 86, 86, 86.1, 86.3, 87, 87, 87, 87.9, 88, 88, 88, 88, 88, 88, 88.5, 89, 89, 89, 89, 89.9, 90, 91, 91, 91			
University of Virginia (1921) 81, (1922, 4) 78, 83, 87, 89, (1923, 9) 85, 86, 87, 88, 88.5, 89, 90, 90, 91			

College	FAILED	Year Grad.	Per Cent.
College of Phys. and Surgs., Dallas		(1907)	71
University of Kiel, Germany		(1919)	65

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Yale University School of Medicine		(1917)	Minnesota
Emory University		(1920)	W. Virginia
University of Georgia		(1913)	Georgia
Bennett College of Eclectic Med. and Surg.		(1906)	Penna.
Loyola University		(1916)	N. Carolina
Tulane University		(1887)	New York
College of Phys. and Surgs., Baltimore		(1913)	W. Virginia
University of Maryland		(1921, 2)	Maryland, Missouri
University of Buffalo		(1913)	New York
University of Vermont		(1918)	Vermont
University of Virginia		(1914)	W. Virginia

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Arkansas		(1917)	U. S. Navy
Rush Medical College		(1921)	U. S. Navy
Medical College of the State of South Carolina		(1916)	U. S. Navy
University of Virginia		(1893)	U. S. Army

Book Notices

TONSILLECTOMY BY MEANS OF THE ALVEOLAR EMINENCE OF THE MANDIBLE AND A GUILLOTINE. With a Review of the Collateral Issues. By Greenfield Sluder, M.D., Clinical Professor and Director of the Department of Rhinology, Laryngology and Otology, Washington University School of Medicine. Cloth. Price, $5. Pp. 176, with 90 illustrations. St. Louis: C. V. Mosby Company, 1923.

This monograph includes a substantial bibliography and an index. The object, as stated in the preface, is to present in a satisfactory manner the author's method of tonsillectomy. To this he subsequently decided to add a review of such collateral issues as embryology, comparative anatomy, general human anatomy, physiology, pathology, clinical laryngology and surgery. The primary object has certainly been accomplished. The clearness of the text, together with ample illustrations, leaves little to be desired as an authoritative guide for this operation, which has become a method of performing tonsillectomy now utilized by almost all laryngologists, at least in this country. There are many who have used this method for years, however, who do not consider it the method of choice for all cases in which tonsillectomy is indicated. The reason why the author finds it universally the method of choice, perhaps, may be expressed in his own words (p. 98): "Some surgeons, however, can perform some operations better by one method than another, oftentimes as a result of being more interested in some one technic. For this reason they will, consciously or not, study the requisites, anatomical and otherwise, and learn these better than when this interest does not exist." The argument in favor of nitrous oxid anesthesia will not appeal to many surgeons who prefer to do their work more deliberately under ether, and prefer the latter method, also, because it provides opportunity for making sure that the bleeding is successfully controlled before deciding that the operation has been completed. The important thing, as the author repeatedly points out, is that the operation of tonsillectomy has been successfully carried out. It is not so important what instrument is used or what method employed. A valuable addition is the review of collateral issues. The profession has been fed up too much on the technic of tonsil operations to the exclusion largely of the much more difficult and certainly more important problems of the pathology of these structures and an intelligent consideration of what constitutes proper indication for their removal. As the author states (p. 76): "The present day literature bears witness to the popularity of the tonsils as the scapegoat for almost all mischief that cannot be fixed upon the teeth." The inevitable result has been the flooding of the country by indiscriminate, uncalled for tonsil operations. More emphasis might have been given to the proposition that the decision for the removal of the tonsils ought to be made by the properly trained laryngologist only in cases in which the local trouble is the main indication. In all other cases in which the supposed indication is some systemic infection, this decision should be reached only in conference with the internist.

BLUTKRANKHEITEN UND BLUTDIAGNOSTIK. Lehrbuch der klinischen Hämatologie. Von Dr. med. Otto Naegeli, o. ö. Professor der inneren Medizin an der Universität Zürich. Fourth edition. Cloth. Price, $6.20. Pp. 587, with 62 illustrations. Berlin: Julius Springer, 1923.

This edition has been much enlarged and improved, especially by the introduction of many colored plates showing various types of normal red and white cells and also the blood pictures in various diseases. These plates are especially well done, and add greatly to the value of the book. Almost every section of the work has been enlarged, so that the work partakes of the nature of an encyclopedia of hematology. The sections dealing with technic are, perhaps, much more brief than is usual with works of this character, but sufficient is given to cover the field in an entirely adequate manner. As in most of the German works on the blood, almost no mention is made of the immense field of chemical examination of the blood, beyond the usual stereotyped discussion of the physicochemical characteristics, such as determination of the viscosity, estimation of albumin and globulin, and determination of specific weight, dry residue and osmotic pressure. No space is given to the methods for determining such factors as the nonprotein nitrogen, urea, uric acid, creatinin, sugar, cholesterol or the inorganic constituents, many of which factors are of great value in our present-day clinical work. Strangely enough, although little attention is given to the question of the reaction of the blood, no mention is made of the hydrogen-ion concentration or other factors, which we in America are using to such an extent. The book may be recommended to those who desire a reference work on hematology which covers the field of blood histology, and outlines the clinical picture of the various blood and general diseases. The plates will enable the worker to familiarize himself with the normal and abnormal blood cells.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume I: The Surgeon General's Office. Prepared under the Direction of Major Gen. M. W. Ireland, M.D., Surgeon General of the Army. By Col. Charles Lynch, M.C., Lieut. Col. Frank W. Weed, M.C., Loy McAfee, A.M., M.D. Cloth. Gratis. Pp. 1389, with illustrations. Washington: Government Printing Office, 1923.

Several months ago we published a review of Volume XV, Part 2 of this series; it concerned the anthropologic, medical and casualty statistics of the United States Army during the World War. The present volume is devoted to a complete survey of the work done in the Surgeon General's Office, and succeeding volumes will be devoted to other aspects of the work.

The initial work of the present volume was under the editorial direction of Lieut. Col. Fielding H. Garrison and Lieut. Col. Casey A. Wood. Their service was discontinued in the latter part of 1920, and since that date all editorial work has been handled in the historical division of the Surgeon General's Office. The general editorial direction has been under Col. Charles Lynch, Lieut. Col. F. W. Weed and Dr. Loy McAfee.

According to the preface, the first medical and surgical history of a war was published by the British Army Medical Department in 1858 and concerned the service of that army in Turkey and the Crimea. The remainder of the preface is an account of other medical and surgical war histories, particularly with relation to the American Civil War.

The book begins with a general introduction describing the evolution of the medical department and the Red Cross Units into complete war strength. The first section describes the relations of the medical department to other war services. Section 2 consists of twenty-seven chapters on the organization and administration of the Surgeon General's Office. In each instance the ranking officer in charge describes the way in which his department was conducted.

Of perhaps greatest interest to medical men in general is the section on personnel, since this describes the way in which civilian physicians were brought into the service, how they were commissioned, and regulations regarding rank and placement in the service. The chapters devoted to various specialties are instructive in their descriptions of the organization for work but are purely historical in character. Their practical value is limited entirely to war periods.

Section 3 is concerned with voluntary aid. Here the various chapters discuss the cooperative efforts of the American Red Cross, Advisory Commission of the Council of National Defense, the National Research Council, the American Medical Association and the Commission on Training Camp Activities.

The appendix contains a list of medical officers killed in the service, abbreviations, and the complete texts of orders, regulations and other instructions governing the medical department issued during the World War. This last item occupies about half the present volume. It is almost wholly printed on a different quality of paper. It represents, in some respects, the most instructive part of the book so far as the general reader is concerned. In these regulations may be read the development not only of methods of handling men and organization but also of medical and surgical care and preventive medicine.

The book concludes with a well prepared index. On the whole, the first volume is a guarantee of the great thoroughness with which this work is being done. It is more extensive and apparently more systematically organized than the British

Medical History, recently reviewed. It seems to lack, however, somewhat of the literary quality which distinguishes the British reports, and it differs also in its lack of reference to individuals responsible for various discoveries and changes affecting the medical service.

In 1920, an appropriation to publish the history was obtained from Congress which provided the sum of $50,000, with the stipulation that the complete cost of the history should not exceed $150,000. In this connection it may be pointed out that the United States Medical History of the World War is limited to an edition of about 3,000, and that it will be available only to libraries and institutions. The British Medical History is for sale in any book store to any one interested; no doubt this will help to some extent in defraying the cost of publication. It is proposed to issue the complete work by 1926.

UEBER GRIPPEPSYCHOSEN. Von Dr. med. F. Walther. Paper. Pp. 160. Bern: Bircher, 1923.

This discussion on the mental complications and sequelae of influenza is based on sixty cases observed at hospitals for the insane in the vicinity of Bern, Switzerland. As regards time relationship to influenza, the psychoses are divided into those occurring during (1) the prodromal period, (2) the febrile period, (3) defervescence and (4) convalescence. A distinction is made between pure grip psychoses, of which there were forty-five cases in the series, and the cases in which the grip was only one factor. The pure grip psychoses are divided into (1) states with chiefly disorders of consciousness: deliriums, twilight states and amentia; and (2) states with chiefly affective disorders: depressive, manic and hysteriform.

THE COLLOIDAL STATE IN ITS MEDICAL AND PHYSIOLOGICAL ASPECTS. By Sir William M. Bayliss, F.R.S., M.A., D.Sc., Professor of General Physiology in University College, London. Cloth. Price, $2.15. Pp. 95, with illustrations. New York: Oxford University Press, 1923.

This monograph is an attempt to give a short, but accurate, account of the properties of colloids, so far as these have bearing on the phenomena that occur in living beings. The author is himself an active and successful investigator in this field. There are brief chapters on the nature of the colloidal state, interfacial phenomena, precipitation, osmotic pressure, viscosity, surface tension, inhibition, physiologic action, and a concluding chapter on proteins and hemoglobin. The significance and probable action of inorganic drugs administered in organic or colloid combinations is briefly discussed in the chapter on physiologic action. The volume is admirable in clearness of diction and in judgment on the many unsettled questions in this field, but there is little or no reference to the literature. The book is a useful aid to biologists and physicians who try to keep abreast of the important advances in colloid chemistry in their relation to physiology and pathology. But one completes the study of this book with the feeling that the brilliant author would have rendered physiology and medicine greater service by allowing himself more pages for more detailed treatment of some of the topics.

A MONOGRAPH ON GONORRHŒA. By A. Reith Fraser, M.D., Lecturer in Venereal Diseases, University of Cape Town. Cloth. Price, 18 shillings, net. Pp. 508, with 105 illustrations. London: Henry Kimpton, 1923.

This volume shows commendable acquaintance with the modern literature of gonorrhea, and a large experience in the treatment of the infected urethra in the male; remedies for such treatment are well chosen and wisely used. But the author's conception and treatment of gonorrhea beyond the urethra, that is, in the seminal duct proper, is less modern and less commendable. Thus, he states that extension of the infection to the vesicles is uncommon except in the chronic stage of gonorrhea (p. 314), although epididymitis, common in the acute stage, proves a preexisting vesiculitis. Consistently, he fails to recommend that when epididymotomy is performed (p. 334) the infected vesicle should be filled with a suitable solution by way of the vas at the same sitting, though such is current practice and teaching. In a long and critical discussion of the standard of cure in the male (pp. 401-416) there is no mention of the microscopic examination for gonococci of the seminal fluid, which obviously contains fluid from all urethral pockets as well as from the usually infected seminal vesicles. Until the advances in the treatment of gonorrhea developed during the last decade shall be incorporated, the book will be valuable for reference rather than as a guide to treatment.

THE INFANT AND YOUNG CHILD: ITS CARE AND FEEDING FROM BIRTH UNTIL SCHOOL AGE. A Manual for Mothers. By John Lovett Morse, A.M., M.D., Professor of Pediatrics, Emeritus, Harvard Medical School; Edwin T. Wyman, M.D., Instructor in Pediatrics, Harvard Medical School, and Lewis Webb Hill, M.D., Assistant in Pediatrics, Harvard Medical School. Cloth. Price, $1.75 net. Pp. 271, with 16 illustrations. Philadelphia: W. B. Saunders Company, 1923.

This book fulfils almost every requirement for the proper instruction of mothers in the care of infants. The advice is practical, nonequivocal, simple and well illustrated. Just enough advice is given to inform parents concerning the main facts relative to illness, without inducing unsafe lay diagnosis and treatment. It is interesting that the authors recognize the fact that persons will indulge in some self-medication for minor conditions and that they recommend a suitable household medicine chest to control such conditions in childhood. On the whole, this is one of the most satisfactory books on the care of children yet published.

RECENT ADVANCES IN MEDICAL EDUCATION IN ENGLAND. A Memorandum Addressed to the Minister of Health by Sir George Newman, K.C.B., M.D., Hon. D.C.L., Chief Medical Officer of the Ministry of Health. Paper. Price, 1 shilling, 3 pence, net. Pp. 195. London: His Majesty's Stationery Office, 1923.

This is a report to the ministry of health, containing an account of the present position of medical education in England and a brief history of the steps leading to that position. It states that the medical course is five years in length; that the medical curriculum has recently been revised; that the number of lectures have been reduced and examination methods made less burdensome, and that the aim is to provide the student with the essential tools whereby he can secure the experience through which he may become a reliable and efficient workman. It takes up in detail the teaching of the various subjects included in the curriculum from the premedical subjects to the courses in the specialties. It is an excellent and logically arranged presentation of the medical curriculum of the present time. The principal changes during the last five years are enumerated as (*a*) reorganization of the grant-in-aid (for universities) system; (*b*) the establishment of clinics of university standard and (*c*) new curriculums in medicine, dentistry and public health. A significant statement is that the war has stimulated an appreciation of the need for "a more practical application of science to the practice of medicine, and the necessity of medical research."

STAMMERING, CLEFT-PALATE SPEECH, LISPING. Edited by Kate Emil-Behnke. Second edition. Cloth. Price, $1.25. Pp. 101. Chicago: Chicago Medical Book Company, 1922.

The authors of this book are neither physicians nor psychologists, but professionally have been trainers of voice for singing and speaking. In their especial work they have been well known and highly respected in England for many years. But the elocutionary teacher is in this day not fully competent to enlighten the world on subjects that require for their complete understanding a broad knowledge of both medicine and psychology. While this book contains interesting, but mostly long known, ideas on stammering, especially on the peripheral side, the important modern psychoneurologic point of view is almost entirely ignored, and the anatomicophysiologic knowledge displayed is far from exact or reliable. The book is not a complete or safe guide to the layman, or a reliable treatise for the physician.

EL CUIDADO DEL NIÑO. Instrucciones para las Madres de Familia. Por el Dr. Alfonso G. Alarcon. Paper. Pp. 167. De Tampico: "El Mundo," 1922.

This little book on child's hygiene is one of those unpretentious works that prove far more useful than contributions of an elaborate character. The author is right in saying in his preface that no more profitable work could be undertaken in his country than the training of the masses in the care of children. He has done his share with this compilation of practical advice to mothers.

Medicolegal

Consent to Examination in Malpractice Case

(Garrett v. Johnson (Ore.), 212 Pac. R. 110)

The Supreme Court of Oregon, in affirming a judgment in favor of the defendant, says that the plaintiff sought to recover damages for personal injuries which he alleged were caused by a surgical operation performed on him in a careless, negligent and unskilful manner by the defendant. The answer filed by the defendant put in issue all the charges of negligence and lack of skill and the claims of injury and damages alleged in the plaintiff's complaint. Two days before the trial of the action, the defendant filed a motion, supported by affidavit, wherein he applied to the court for an order requiring the plaintiff to submit his person, before the trial, for a physical examination by competent and reputable physicians and surgeons, to be appointed by the court. The plaintiff did not resist the motion, and accordingly it was granted. The plaintiff did not object or except to the allowance of the motion, but acquiesced in its requirements, and submitted to the physical examination directed therein without protest. The plaintiff further entered into a stipulation with the defendant wherein the filing of written findings by the physicians appointed to examine him was expressly waived by him, and in which it was agreed that either party to the action might call those physicians as witnesses on the trial and examine them orally as to the condition of the plaintiff, and that either party might question the physicians prior to the trial as to the result of their examination. The plaintiff called as a witness in his behalf one of the physicians who made the examination. On his appeal to the supreme court the plaintiff assigned as error the action of the trial court in allowing the defendant's motion to require him to submit his person for physical examination, as stated above. But the record disclosed that the action of the trial court which the plaintiff assigned as error was taken with his consent, and that the question suggested by the plaintiff's assignments of error was not raised in the court below. Questions not raised in the lower court, and which do not challenge the jurisdiction of that court, are not reviewable in the supreme court. On the record before it, the supreme court is without authority to review the decision on the motion requiring the plaintiff to submit to a physical examination.

Hardships of the Law for Would-Be Practitioners

(People v. Anderson (Calif.), 214 Pac. R. 244)

The District Court of Appeal of California, Third District, in affirming a judgment of conviction of the defendant of practicing medicine without a license, says that it was charged in the information that the defendant "on or about the 5th day of December, 1921, . . . did then and there wilfully, wrongfully, and unlawfully practice, attempt to practice, and advertise and hold himself out as practicing a system or mode of treating the sick and afflicted in this state without having at the time of so doing a valid unrevoked certificate from the state board of medical examiners of the state of California."

The offense was sufficiently described in contemplation of Section 17 of the state medical practice act (Statutes of 1917, p. 114). The court holds also (without stating what the evidence showed, or what system the defendant practiced) that the evidence was sufficient to justify the conviction. Indeed, at the time the judgment was pronounced, counsel for the defendant admitted that his client had practiced his system of treatment without a license from the duly authorized authorities, but he contended that the board of medical examiners had acted capriciously and arbitrarily in denying the defendant a certificate. But if such a consideration might be regarded in a proceeding of this kind, it was sufficient to say that there was no evidence to that effect, and such an assertion did not, of course, afford any ground for setting aside the verdict. It was very true, as was stated by the trial judge, that neither that court nor any other court made the law. If the law is wrong—if it naturally creates a hardship on a certain class of practitioners, resort to the legislature or to the people is the only remedy; the courts cannot correct it. The courts are bound by the law, and perform their duty in accordance with the law only as they find it.

Extent of Period of Temporary Total Disability

(Peabody Coal Co. v. Industrial Commission et al. (Ill.), 139 N. E. R. 7)

The Supreme Court of Illinois says that an employe of the coal company sustained a severe injury to his left arm. It appeared that he went back to his work in the mine two or three different times before he found that he could not keep on working because he could not lift his arm. The court thinks that the finding of the industrial commission that the man was totally incapacitated for twenty-six weeks found support in the testimony—that is, the time of treatment for six months, deducting the time he worked and received compensation and adding the time for the building-up process immediately following the time of treatment. Under the decisions of this court, the extent of the period of temporary total disability is the period of the healing process, during which time the injured employee is totally incapacitated for work by reason of the illness attending the injury. The fact that this employee attempted to perform labor at the mine and failed should not stand as a bar to prevent his receiving compensation for the time he was incapacitated, and this court thinks the time for the building-up process was properly included as a part of the period of temporary total incapacity.

Characterization of Action Against Physician

(Pate v. Dumbauld (Mo.), 250 S. W. R. 49)

The Supreme Court of Missouri; Division No. 2, says that the plaintiff was kicked on his right leg by a horse, and suffered a compound fracture, the shin bone being broken about midway between the knee and the ankle. The defendant attended him for about two months, when, while the cast was still on, the plaintiff discharged the defendant from the case and called an osteopath to treat the leg. Subsequently the plaintiff brought this action to recover damages for alleged malpractice by the defendant.

At the outset, it was important to determine whether this was an ordinary action for damages, in which the facts constituting the alleged negligence were specifically pleaded, or whether general negligence was pleaded, and a recovery sought under the doctrine of Res ipsa loquitur ("the matter speaks for itself"). In plain, unequivocal language, the petition set out, in detail, all the facts, including the alleged negligent acts of the defendant in failing to perform his duty. Under such circumstances, there was no room for the principle of Res ipsa loquitur, even if it might otherwise be applied in a case of this character, in which general negligence is relied on. When the plaintiff chooses in his petition to allege specific acts of negligence, the rule of law places the burden of proving such negligence on him, and a recovery, if had at all, must be on the specific negligence pleaded. Counsel for the defendant vigorously assailed the intimation in *Eichholz* v. *Poe* (Mo.), 217 S. W. 285, that a recovery may be sustained in a malpractice case, based on the doctrine of Res ipsa loquitur, and they cited a large number of well-considered cases sustaining their contention. But this court, having reached the conclusion that this action was one based on specific acts of negligence, deems it unnecessary to consider the question as to whether a recovery can be had in a case, under a plea of Res ipsa loquitur.

It was not alleged in the petition, or asserted elsewhere, that the defendant did not possess the ordinary and average skill of regular physicians in the place of his residence and vicinity. In the absence of evidence on the subject, the law presumed that he did his duty.

The osteopathic physician was the only physician who testified in the case. He removed the plaster cast from the plaintiff's leg after the defendant had been discharged. He said that there was no evidence that the bones had not been

properly set; that no union had occurred because Nature had failed to throw from the ends of the broken bones the exudate or callus necessary to unite the bones, and that such failure was due to the condition of the plaintiff's blood; that the plaintiff's physical condition was such that no bone-growing material was thrown out from the ends of his bones by Nature; that it would have made no difference in this case whether the bones were placed or held in apposition or not. This witness also stated that the plaintiff, who was 27 years old when injured, was afflicted with a form of epilepsy; that during the epileptic convulsion the muscles contracted to such an extent that the broken bones would separate unless there was enough bone-growing material there to hold them together; that a roentgenogram taken almost eleven weeks after the accident showed that no exudate or bone-growing material had been thrown out.

No man should be held to a higher degree of skill or care than a fair average of his profession, and the standard of due care is the conduct of the average prudent man. Taking the testimony of the plaintiff and his witnesses at full value, this court is of the opinion that he failed to show by substantial evidence that the defendant was derelict in respect to his professional duty in this case, or that he was guilty of any of the specific acts of negligence charged against him in the petition. The trial court properly refused to submit the case to the jury on mere conjecture, but erred in setting aside the nonsuit which it had granted and in afterward granting a new trial; wherefore its order is reversed, and the cause remanded, with directions to set aside its order granting the plaintiff a new trial, and to reinstate the judgment of nonsuit formerly entered in favor of the defendant.

Definitions of Words "Wounds" and "Lesion"

(People v. Durand (Ill.), 139 N. E. R. 78)

The Supreme Court of Illinois says that the defendant was convicted of murder by throwing at a man named Wilson a piece of brick which struck him a little above and about two inches back of his left ear. Wilson died a short time after he fell. The skull was fractured and slightly indented, and there were a cut and a bruise over the fracture. The cut and bruise were the only wounds on the body, according to the testimony of the physicians. At the close of the people's evidence, the defendant's counsel moved the trial court to exclude all the evidence and to direct a verdict for the defendant on the ground of a variance between the indictment and the proof. Every count in the indictment charged that the deceased received a mortal wound on the left side of the head at the hands of the defendant, from which he instantly died. It was the contention of the defendant that there was no proof of a wounding of the deceased by the defendant, and that for that reason he could not have died from a wound. But a wounding was clearly proved, and there was no variance. In medicine the word "wounds" means injuries of every description that affect either the hard or soft parts of the body, and it comprehends bruises, contusions, fractures, luxations, etc. In law the word means any lesion of the body, and the correct definition of a "lesion" is a hurt, loss or injury. Under the statute of 9 George IV, it has been held in England that in criminal cases to make a wound there must be an injury to the person by which the skin is broken through. The decisions under that statute have no binding force in Illinois, as that statute was never the law in Illinois.

Physician Not Allowed to Contradict Testimony of Brother of Patient

(Arizona Copper Co., Limited, v. Garcia (Ariz.), 214 Pac. R. 317)

The Supreme Court of Arizona says that in this action to recover damages for personal injuries the question was raised: Was the defendant company entitled to examine plaintiff Garcia's physician for the purpose of contradicting evidence introduced by Garcia of what the physician did in the course of his treatment incident to the injury? Garcia's brother testified that fragments of bone were removed from Garcia's leg by the physician. The defendant offered to contradict that testimony by the testimony of the same physician, but was not permitted to do so. The rights of the parties in the premises were governed by the Arizona statute, which reads:

> A physician or surgeon cannot be examined, without the consent of his patient, as to any communication made by his patient with reference to any physical or supposed physical disease or knowledge obtained by personal examination of such patient; provided, that if a person offers himself as a witness and voluntarily testifies with reference to such communications, that is to be deemed a consent to the examination of such physician.

In *Arizona & New Mexico Railway* v. *Clark*, 235 U. S. 669, 35 Sup. Ct. 210, this statute was construed. Mr. Justice Pitney there says:

> To construe the act in accordance with the contention of plaintiff in error would not only be a departure from its language, but would render it inapplicable in all cases where the "physical or supposed physical disease" is the subject of judicial inquiry, and where any averment respecting it is made in pleading, or evidence on the subject is introduced at the trial in behalf of the patient. This would deprive the privilege of the greatest part of its value, by confining its enjoyment to the comparatively rare and unimportant instances where the patient might have no occasion to raise an issue or introduce evidence on the subject, or where the patient's disease might happen to be under investigation in a controversy between other parties. We are constrained to reject this construction.

The construction of the statute in question as embodied in this quotation is the law of Arizona. In accordance with it the ruling of the trial court excluding the testimony of the physician was correct.

Roentgenograms Sufficiently Identified by Physician

(Jones v. Sinsheimer (Ore.), 214 Pac. R. 375)

The Supreme Court of Oregon says that, in this action to recover damages for personal injuries from the plaintiff's having been hit by the defendant's automobile, the defendant contended that the trial court erred in admitting some roentgenograms of the plaintiff's broken bones, on the ground that the roentgenograms were not properly identified. However, the physician under examination at the time the roentgenograms were introduced in evidence declared that they were pictures of the injured part. That was sufficient to overrule the objection, which, indeed, went only to the weight of the testimony.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Washington, D. C., Oct. 15-20. Dr. Luther C. Peter, 1529 Spruce St., Philadelphia, Secretary.

American Association of Railway Surgeons, Chicago, Oct. 18-20. Dr. L. J. Mitchell, 29 E. Madison St., Chicago, Secretary.

American Child Health Association, Detroit, Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st St., New York, Secretary.

American Public Health Association, Boston, Oct. 8-11. Mr. A. W. Hedrich, 370 Seventh Avenue, New York, Secretary.

American Roentgen Ray Society, Chicago, Sept. 18-23. Dr. W. W. Watkins, Goodrich Building, Phoenix, Ariz., Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 4-6. Col. James Robb Church, Army Medical Museum, Washington, D. C., Secretary.

Central Neuropsychiatric Association, St. Louis, Oct. 20. Dr. Karl A. Menninger, Topeka, Kan., Secretary.

Central States Pediatric Society, Detroit, Oct. 18-19. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Pa., Secretary.

Delaware State Medical Society, Middletown, Oct. 8-9. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Terre Haute, Sept. 26-28. Dr. Charles N. Combs, Terre Haute, Secretary.

Medical Association of the Southwest, Kansas City, Mo., Oct. 4-8. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.

Minnesota State Medical Association, St. Paul, Oct. 10-12. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.

Mississippi Valley Medical Association, Hot Springs, Ark., Oct. 9-11. Dr. John L. Tierney, University Club Bldg., St. Louis, Secretary.

Nevada State Medical Association, Reno, Sept. 28-30. Dr. Horace J. Brown, Thoma-Bigelow Building, Reno, Secretary.

New England Surgical Society, Boston, Oct. 18-19. Dr. P. E. Truesdale, 151 Rock Street, Fall River, Mass., Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Washington, D. C., Nov. 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Tri-State District Medical Society, Des Moines, Iowa, Oct. 29-Nov. 1. Dr. William B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Vermont State Medical Society, Bennington, Oct. 11-12. Dr. W. G. Ricker, St. Johnsbury, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 16-19. Mr. G. H. Winfrey, 104½ W. Grace St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Oct. 3-5. Mr. J. G. Crownhart, 558 Jefferson St., Milwaukee, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

6: 1-136 (July) 1923

Some Fundamental Elements in Advancement of Medicine. J. A. Sampson, Albany, N. Y.—p. 1.
*Radiography of Closed Fallopian Tubes: To Determine Location of Obstructions. W. T. Kennedy, New York.—p. 12.
Desiccated Ovary: Its Use, Preparation and Suggestion as to Method of Standardization. W. G. Lyle, New York.—p. 33.
Limitations of Radiotherapy in Management of Fibromyoma of Uterus. J. A. Corscaden, New York.—p. 42.
Dextroversion of Uterus, with Congenital Absence of Left Fallopian Tube, Ovary, Broad Ligament, Round Ligament, Kidney and Ureter. W. T. Dannreuther, New York.—p. 50.
*Insufflation of Uterus and Fallopian Tubes. Report of 600 Cases Examined by Rubin Method. A. H. Aldridge, New York.—p. 53.
Fibroid Tumors Complicating Pregnancy and Their Treatment. G. W. Kosmak, New York.—p. 63.
Processes of Tubal Pregnancy. E. McDonald, Philadelphia.—p. 72.
*Uterine Carcinoma and Its Treatment by Continuous Low Heat: Preliminary Report. J. F. Percy, Los Angeles.—p. 78.
Hemorrhages in the New-Born. L. A. Wing, New York.—p. 85.

Radiography of Closed Fallopian Tubes.—Kennedy insists that a roentgenogram should not be made in any case in which there is evidence of bleeding. The degree of flexion of the body of the uterus can be determined if one knows the position of the uterus. The internal os can withstand a pressure of 200 mm. of mercury in the cervical canal without its musculature allowing the passage of solution into the uterine cavity. Many isthmuses, while permitting the sodium bromid solution to pass through their canals, can overcome a pressure of 200 mm. of mercury and expel their contents. Thirty and 8 tenths per cent. of the tubes examined were occluded at the isthmus and 69.2 per cent. were occluded at the fimbria. Of the tubes casting a shadow, 61.2 per cent. of the isthmuses appear and 38.3 per cent. do not appear. Study of a sterile woman having no active cervical or tubal involvement should be initiated with carbon dioxid insufflation (Rubin). If an occlusion is determined, the uterus and tubes should be roentgenographed to determine the points of occlusion, and provided the husband is normal, a salpingostomy may be done, with some hope of success, if the occlusion is at the fimbriated end of the tube.

Insufflation of Uterus and Tubes.—An experience with 600 cases convinces Alridge that the Rubin method for the determination of tubal patency is a simple, safe, diagnostic procedure. If details in technic are carefully controlled one can form a definite opinion as to the condition of the tubes in approximately 85 per cent. of the cases examined. Patients should not be examined when near a menstrual period or in the presence of acute pelvic inflammatory disease or serious organic heart disease. All cases of sterility, in which a definite diagnosis of the cause cannot be made by bimanual pelvic examination, should be insufflated. Conditions which accompany menstruation, uterine displacements, ovarian and uterine tumors, may cause partial or complete tubal obstruction and yet not be apparent to inspection at operation. The method is almost entirely diagnostic. Pregnancy follows insufflation in only a very small percentage of cases. Operative procedures to open tubes or to keep them open in cases where both tubes have been involved in an inflammatory process, fail in a very high percentage of cases.

Continuous Low Heat Treatment of Uterine Carcinoma.—Percy makes a preliminary report on the value of the prolonged use of a low degree of heat in the treatment of suitable cases of cancer. Some of these are in the vagina, cervix, uterocervical junction and body of the uterus. In the majority of instances in which this apparatus is used the heat is easily regulated and controlled so as to be destructive only in a minimum degree to normal tissues, while acting in the greatest measure as a destroyer of the cells of cancer in any portion of the birth tract. An additional benefit is the one of practical freedom from danger and as well simplicity and comparative cheapness of the required apparatus.

American Journal of Physiology, Baltimore

65: 223-417 (July 1) 1923

Contraction Rate of Excised Rat Uterus with Reference to Oestrous Cycle. E. Blair, Berkeley, Calif.—p. 223.
Effect of Deficient and Excessive Pulmonary Ventilation on Nasal Volume. A. L. Tatum, Chicago.—p. 229.
Electromyographic Studies of Muscular Fatigue in Man. S. Cobb and A. Forbes, Boston.—p. 234.
*Influence of Pancreas Perfusate on Pancreatic Diabetes (Dogs). E. R. McCarthy and H. C. Olmstead, Chicago.—p. 252.
*Studies on Physiology of Liver. V. Hepatic Factor in Chloroform and Phosphorus Poisoning. C. S. Williamson and F. C. Mann, Rochester, Minn.—p. 267.
*Alleged Effects on Body Growth and Gonad Development of Feeding Pituitary Gland Substance to Normal White Rats. C. S. Smith, Chicago.—p. 277.
*Effect of Quinin on Iodin Content of Thyroid. H. Sugata, Chicago.—Chicago.—p. 282.
Lipase Production by Liver. P. V. Prewitt, New York.—p. 287.
Influence of Thyroid Extracts and Thyroxin on Rate of Multiplication on Paramecia. G. T. Cori, Buffalo.—p. 295.
Effect of Tension on Action Current of Skeletal Muscle. A. Forbes, L. H. Ray and A. McH. Hopkins, Boston.
*Hemolytic Action of Radium Emanation. A. C. Redfield, and E. M. Bright, Boston.—p. 312.
*Suprarenals and Pancreatic Diabetes. G. N. Stewart and J. M. Rogoff, Cleveland.
*Action of Insulin on Suprarenalectomized Rabbits. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 342.
*New Experiments on Nature of Sensation of Thirst. G. T. Pack, New Haven, Conn.—p. 346.
Functions of Cervical Sympathetic as Manifested by Its Action Currents. J. Byrne and W. Einthoven, Leyden, Netherlands.—p. 350.
Toxicity of Alcoholic Extract of Ox Bile When Fed to White Rats. E. F. Cooper, Chicago.—p. 363.
*Studies on Pathogenesis of Tetany. II. Mechanism Involved in Recovery from Parathyroid Tetany. L. R. Dragstedt, K. Phillips and A. C. Sudan, Chicago.—p. 368.
Circulatory Responses of Man to Sudden and Extreme Anoxemia. E. C. Schneider and D. Truesdell, Middletown, Conn.—p. 379.
Influence of Hydrion Concentration on Vascular Tonicity. I. With Special Reference to Buffered Phosphate Perfusing Solutions, and Specific Action of Lactate Ion, in Frog. C. D. Leake, F. G. Hall and A. E. Koehler, Madison, Wis.—p. 386.
*Effects Following the Intestinal Administration of (Ileti n) Insulin. D. S. Hachen and C. A. Mills, Cincinnati.—p. 395.
*Studies on Physiology of Liver. VII. Effect of Insulin on Blood Sugar Following Total and Partial Removal of Liver. F. C. Mann and T. B. Magath, Rochester, Minn.—p. 403.

Influence of Pancreas Perfusate on Diabetes.—Pancreatic perfusates, obtained by perfusing for from fifteen to sixty minutes the excised dog pancreas with defibrinated diabetic dog's blood slightly diluted with Tyrode's solution, when transfused into completely pancreatectomized dogs, McCarthy and Olmstead state, do not consistently reduce the hyperglycemia and glycosuria. There may be a temporary decrease in the excretion both of sugar and nitrogen in the urine. Similar results are secured by transfusion of spleen perfusates into diabetic dogs. Perfusing such organs as the pancreas or the spleen, even under the closest approximation to physiologic conditions, appears to add toxic substances to the perfusate, and as judged by the extremely slight response of the perfused pancreas to secretion, the cells are probably not in condition to secrete the hormones. Under more artificial conditions of perfusion, such as the use of pure Ringer or Tyrode solutions, and by prolonging the perfusing time, the hormones may enter the perfusate, not by cell secretion, but by cell extraction or solution. Such perfusates become essentially crude organ extracts, containing also substances that are toxic on intravenous injection.

Hepatic Factor in Chloroform and Phosphorus Poisoning.—A series of experiments was performed by Williamson and Mann to determine whether the characteristic symptoms and the concomitant changes in the blood, namely, a decrease in blood sugar and the appearance of uric acid, which invariably follow total removal of the liver by surgery, would also occur after the administration of chloroform and phosphorus. The characteristic symptoms which follow hepatectomy were not observed after poisoning with chloroform or phosphorus, although the results of the poisoning were in many instances fatal. Hypoglycemia occurred in but a small percentage of these experiments and uric acid in the majority. The results conclusively prove that the poisons, while greatly injurying the functions of the liver, do not produce complete hepatic insufficiency, except, possibly, in a very small number of instances. Other tissues and organs are undoubtedly profoundly affected, and in many instances the functional damage to the liver is

probably not the primary cause of death. However valuable studies on the effect of chloroform, phosphorus and allied poisons may be, particularly in relation to hepatic disease, conclusions with regard to the function of the liver based on such studies must be drawn cautiously.

Effect of Feeding Pituitary to Normal Rats.—When desiccated pituitary gland substance (whole gland, anterior lobe, posterior lobe) is fed in quantities of from 0.05 to 0.30 gm. per day for from four to sixteen weeks to white rats 1 month old, and on an adequate dietary, Smith says it is evident that pituitary feeding has no influence on body growth or gonad development.

Effect of Quinin on Iodin Content of Thyroid.—Sugata found that both quinin and high external temperature cause an increase in the iodin content and concentration in the thyroid while a decrease is produced by starvation. These facts are correlated in the view that endogenous protein metabolism is fundamentally responsible for the distribution of iodin in the body.

Hemolytic Action of Radium Emanation.—The destruction of erythrocytes by radium emanation, according to Redfield and Bright, is due chiefly to the action of alpha rays. The processes of hemochromolysis and stromatolysis proceed independently of one another. The electrical resistance of the suspension increases as hemochromolysis proceeds, and is reduced again when stromatolysis occurs.

Suprarenals and Pancreatic Diabetes.—In the experiments made by Stewart and Rogoff the right suprarenal was removed in dogs, and the left was denervated. In addition the medulla of the left gland was destroyed by curetting with a drill inserted at the upper pole. A portion of the cortex of the left suprarenal was also destroyed. The epinephrin output was, of course, abolished by this operation. After an interval for recovery of the animals, total pancreatectomy was performed. Diabetes appeared precisely as in dogs whose suprarenals had not been interfered with. The hyperglycemia and glycosuria were as quickly developed, reached as high a level, and were similarly affected by insulin. Even after removal of the (already denervated and demedullated) left suprarenal, the diabetes persisted in undiminished intensity, so long as the animals remained in good condition. There is, therefore, no experimental basis for the theories which assign to the suprarenals (particularly to the epinephrin physiologically liberated from them) a special relationship to the pancreas in the regulation of the carbohydrate metabolism and the blood sugar content, and in the genesis of the diabetes which follows pancreatectomy.

Action of Insulin on Suprarenalectomized Rabbits.—The action of insulin on rabbits which have survived complete removal of the suprarenals, Stewart and Rogoff state, does not differ noticeably from its action on normal rabbits.

Nature of Thirst Sensation.—Cannon's theory of thirst is substantiated by Pack by the fact that pilocarpin administered to rabbits deprived of water for seven days relieves thirst by stimulating the flow of saliva.

Parathyroids Part of Detoxicating Mechanism.—The experimental evidence presented by Dragstedt et al. seems most in harmony with the theory that the parathyroid glands form a part of the detoxicating mechanism of the body.

Effect of Intestinal Administration of Insulin.—The experiments made by Hachen and Mills showed that insulin placed in the small intestine of rabbits and dogs causes a very prompt lowering of the blood sugar level in ether hyperglycemia. Although the effect of insulin by the intestinal route is prompt, its action is not sustained, lasting only an hour. Therefore, to produce the desired effect by intestinal administration huge doses of insulin are required. Subcutaneous and intravenous administration of small quantities of insulin gives prompt results as well as sustained reactions, lasting over a period of several hours. In man, the blood sugar lowering effect of insulin was not noted after good sized doses were administered by the intestinal route.

Effect of Insulin on Blood Sugar After Hepatectomy.—Blood sugar estimations were made by Mann and Magath following the injection of insulin, before and after total and partial removal of the liver. The symptoms associated with the hypoglycemia following the administration of insulin do not differ essentially from the symptoms associated with the hypoglycemia following removal of the liver, and the action of glucose seems to be identical in the two conditions. However, the hypoglycemia following the administration of insulin may not always be associated with symptoms, while that following removal of the liver invariably produces symptoms. The effect of large doses of insulin in producing hypoglycemia is not changed by total removal of the liver, nor is the hypoglycemic action of small doses of insulin modified by the partial removal of the liver. On the other hand, the liver is absolutely necessary for the permanent recovery of the blood sugar level. When the liver is totally removed, the blood sugar level cannot be maintained normally. When the liver is partially removed the return to normal following insulin is greatly retarded. These experiments prove that the liver is certainly not necessary for the hypoglycemic action of insulin, although they do not show that it is not directly or indirectly involved in such an action. These experiments also definitely prove that the liver is necessary for permanent recovery of the blood sugar level.

American Journal of Roentgenology and Radium Therapy, New York

10: 507-592 (July) 1923

*Osteitis Deformans. S. Moore, St. Louis.—p. 507.
Complete Anterior Dislocation of Distal Epiphysis of Femur. T. West, Rye, N. Y.—p. 519.
Secondary Signs of Gallbladder Pathology. R. D. Leonard, Boston.—p. 521.
*Roentgenographic Study of Gastric Mucosa in Normal and Pathologic States. R. A. Rendich, New York.—p. 526.
Case of Syphilis of Stomach. S. F. Weitzner, New York.—p. 537.
Case of Adenopapilloma of Stomach. I. S. Ingber, San Francisco.—p. 539.
Diagnosis of Obscure Abdominal Lesions by Roentgen-Ray Gastro-Intestinal Examination. W. H. Dickson, Toronto, Canada.—p. 540.
Roentgen-Ray Diagnosis of Unusual Laryngotracheal Esophageal Conditions and Diseases. S. Iglauer, Cincinnati.—p. 547.
Coccidioidal Granuloma. Report of Cases. R. G. Taylor, Los Angeles.—p. 551.
Cardiac Measurements in Children. R. M. Tyson and F. F. Borzell, Philadelphia.—p. 559.
Water Cancer or Gangrenous Stomatitis Treated with Roentgen Ray. J. W. Cathcart, El Paso, Texas.—p. 561.
Device to Prevent Omission of Filter in deep Roentgen-Ray Therapy. G. E. Pfahler, Philadelphia.—p. 562.
New Tube Holder for Roentgen-Ray Therapy. T. A. Groover and E. A. Merritt, Washington, D. C.—p. 564.
Deep Roentgenotherapy in Treatment of Carcinoma of Breast. G. E. Pfahler, Philadelphia.—p. 566.
Simple Monogram for Determination of Radium Skin Doses. E. H. Quimby, New York City.—p. 574.
Roentgen-Ray Therapy in Treatment of Nasal Polypi. J. G. Ware, Santa Barbara, Calif.—p. 579.

Osteitis Deformans.—Moore suggests that Paget's disease be investigated more thoroughly than it has been for the reason that there might be uncovered a function of bone other than the rather passive ones of support and the housing of blood-forming organs. Aberrance of this possible function may produce the disease known as osteitis deformans.

Roentgenographic Study of Gastric Mucosa.—The prime object of Rendich's work was the demonstration of the gastric rugae as an indication of gastritis; this possibility having suggested itself after observing the wide variation in the size and character of these folds, particularly during fluoroscopy. Later, it seemed to Rendich that such study of the mucosa offered possibilities of demonstrating the earlier changes of organic lesions and in the more detailed study of these conditions already recognized by the present day routine procedures. The method of examination suggested has already served very satisfactorily in more detailed and confirmative evidence of gastric ulcer; more complete study of gastric neoplasm; differentiation of extra-gastric pressure defects from intrinsic lesions; the more satisfactory examination of the enterostomized stomach; the study of gastritis, and the demonstration of the small intestine.

American Review of Tuberculosis, Baltimore

7: 291-374 (July) 1923

*So-Called Selective Collapse in Artificial Pneumothorax: Plea for Low Intrapleural Pressures. H. Hennell and B. P. Stivelman, Bedford Hills, New York.—p. 291.

*Lower Lobe Pulmonary Tuberculosis. W. S. Middleton, Madison, Wis. —p. 307.
Primary Complex in Human Tuberculosis and Its Significance. A. Ghon, Prague.—p. 314.
*Wildbolz Auto-Urine Test for Activity in Tuberculosis. J. H. Korns, Peking, China.—p. 318.
*Wildbolz Auto-Urine Reaction: Report of Seventy-Five Cases. J. M. Hayman, Jr., Philadelphia.—p. 325.
*Comparison of Sodium Hydroxid and Antiformin Methods for Cultivating Tubercle Bacilli. M. B. Lurie, Denver.—p. 332.
Relation of Mineral Dusts to Tuberculosis. III. Relatively Early Lesions in Experimental Pneumokoniosis Produced by Carborundum Inhalation and Their Influence on Pulmonary Tuberculosis. L. U. Gardner, Saranac Lake, N. Y.—p. 344.
*Cauterization: Its Effect on Cutaneous Tuberculous Lesions and Dissemination of Tuberculosis in Guinea-Pig. H. J. Corper and M. B. Lorie, Denver.—p. 358.
Case of Chronic Miliary Pulmonary Tuberculosis of Low Virulence. I. S. Kahn, San Antonio, Texas.—p. 370.

Selective Collapse in Artificial Pneumothorax.—By so-called selective collapse is meant the tendency of the injected air to accumulate about the diseased part of the lung, as if selectively collapsing it, and leaving the healthy portions relatively unaffected. Cases are presented by Hennell and Stivelman which are illustrated with roentgenograms to show the delicacy of the mechanism of this phenomenon under various circumstances. While it is admitted that in a limited group of cases with a fixed mediastinum, and in the presence of certain definite indications, the use of even very high positive pressures may be justifiable, it is claimed that the old practice of establishing and maintaining in all cases a complete collapse of the treated lung by suitable positive pressures is entirely unwarranted in the light of better understanding of the pneumodynamics of induced pneumothorax. Among the great advantages of this method the following are particularly noteworthy: (*a*) The more perfect control over the pneumothorax that can be exercised with it, especially with reference to the ultimate reexpansion of the lung at the termination of the treatment. (*b*) The possibility of avoiding chest deformity and the danger of reactivating dormant foci which are incident to excessive pulling of mediastinal structures and stretching of collapsed lung tissue, and which are likely to occur when complete collapse of the entire treated lung is resorted to.

Lower Lobe Pulmonary Tuberculosis.—Four cases of pulmonary tuberculosis are presented by Middleton in which the significant physical signs were in the basal lobes. In none of these cases were there signs of pathologic changes in the apices on physical examination.

Auto-Urine Test for Activity in Tuberculosis.—A series of eighty-one patients, thirty-three actively tuberculous and forty-eight nontuberculous, were given the auto-urine test by Korns, of which 74 per cent. agreed and 26 per cent. disagreed with Wildbolz' findings. Certain theoretical considerations are presented which lead the author to question the specificity of the test. He says that in its present form the Wildbolz test is not practically helpful, inasmuch as it would be unsafe in doubtful cases to use the test as a criterion of activity.

Auto-Urine Test.—Hayman believes that a definitely positive reaction, properly controlled, is indicative of active tuberculosis and that a negative test is of less value unless repeated. Doubtful reactions, when the degree of infiltration to test and control urines are approximately the same, must be interpreted with extreme care and are of little or no value in diagnosis. The test, while theoretically sound, is beset with so many sources of error in its present form, that reliance cannot be placed on it equivalent to the clinical criteria at present in use. It may, however, be useful to corroborate the clinical diagnosis.

Comparison of Sodium Hydroxid and Antiformin Methods for Cultivating Tubercle Bacilli.—Lurie regards the sodium hydroxid method as being decidedly superior to the antiformin method. The advantages of time saving and ease of manipulation possessed by the simplified antiformin method are gained at the expense of a decided decrease in the percentage of positive cultural results for human tubercle bacilli. If the sedimentation procedure is resorted to in both cases, the sodium hydroxid (Petroff's) method possesses the advantages of working with a more stable, more easily obtainable, less irritating and more economical reagent.

Effect of Cauterization on Cutaneous Tuberculous Lesions.—Corper and Lurie assert that cauterization of local intracutaneous site of inoculation of avirulent human tubercle bacilli (from 0.001 to 1.0 mg.) in guinea-pigs efficiently destroys and has a beneficial influence on the local lesion, without tending to affect appreciably the systemic dissemination of the disease, regardless of whether cauterization was performed immediately or one month after the intracutaneous inoculation. When, however, virulent human tubercle bacilli are used for intracutaneous inoculation, cauterization of the local site acts differently. It has beneficial influence on the local lesion of the skin, even when performed two weeks after the initiation of the lesion, and provided the infecting dose (0.000,01 mg. or less) is not excessive. When the intracutaneous dose is as large as 0.1 mg. the local effect of the cauterization is barely appreciable. When the intracutaneous dose for virulent bacilli is not excessive (not over 0.000,01 mg.), there is a striking effect of the cauterization of the local skin site on the general dissemination of the disease, depending on when cauterization was performed with relation to the infecting inoculation. If the local site is cauterized within four days after infection, there is found distinctly less macroscopic tuberculosis in the guinea-pigs examined two months after infection, while cauterization of the local site later than four days after infection results in a distinctly greater amount of generalized tuberculosis, as compared with control, untreated guinea-pigs given only the intracutaneous inoculation of the bacilli. If the intracutaneous dose of virulent bacilli is large (0.001 mg. or more) the striking differences produced by the local cauterization, both in the local site and the general tuberculous involvement, are to a great extent overshadowed by the massive infection of the guinea-pigs.

Boston Medical and Surgical Journal

189: 161-188 (Aug. 2) 1923

Salvage of Backward Child. W. E. Fernald.—p. 161.
*Clonorchiasis in Boston. G. C. Shattuck, Boston.—p. 165.
Chronic Bronchitis. J. B. Hawes, Boston.—p. 166.
Anesthesia: Report of 1500 Consecutive Cases. B. Rapoport, Boston.—p. 169.
End-Result Study of Dermatologic Cases Treated by Roentgen Rays. C. G. Lane, Boston.—p. 174.
Report of Five Cases of Acute Encephalitis. A. F. Anderson, Boston. —p. 177.

189: 189-218 (Aug. 9) 1923

Surgery of Prostate Gland. J. H. Gleason, Manchester, N. H.—p. 189.
Basal Metabolism. I. Modified Clinical Method of Determination. W. H. Stoner, Philadelphia.—p. 193.
Basal Metabolism. II. Simplified Data Card for Clinical Determination. W. H. Stoner, Philadelphia.—p. 195.
Use of Tissue Juices in Tonsillectomy. J. B. Greene, Asheville, N. C. —p. 200.
Subcutaneous Emphysema Complicating Tonsillectomy. L. Richards, Boston.—p. 203.
Relation of Specialist to General Practitioner. W. G. Phippen, Salem, Mass.—p. 204.
Carcinoma of Appendix: Report of Case. R. J. Shafer, Lowell, Mass. —p. 206.

Clonorchiasis in Boston.—Clonorchiasis apparently has not been reported previously from the New England States. Shattuck records a series of fifty-four cases observed in Boston during the last sixteen months. Although the disease is generally regarded as incurable, a few cases in which treatment was permitted have yielded results which are distinctly encouraging. A fuller report of the cases treated will be made later.

Journal of Bacteriology, Baltimore

8: 297-419 (July) 1923

Gelatin Liquefaction by Bacteria. M. Devine and D. C. Carpenter, Iowa City.—p. 297.
Variation in Limiting Hydrogen-ion Concentrations of Streptococci. L. Brody and L. Arnold, Chicago.—p. 307.
Coagulation and Sterilization of Loeffler's Blood Serum Medium Under Steam Pressure. A. J. Hinkleman, Oklahoma City, Okla.—p. 315.
Effect of Certain Bacteria on Toxin Production of Bacillus Botulinus In Vitro. I. C. Hall and E. Peterson, Berkeley, Calif.—p. 319.
Nitrification. V. Mechanism of Ammonia Oxidation. A. Bonazzi, Wooster, Ohio.—p. 343.
*Morphology of Bacteria. H. Bergstrand, Stockholm, Sweden.—p. 365.
Clostridium Putrificum. II. Morphological, Cultural and Biochemical Study. G. F. Reddish and L. F. Rettger, New Haven, Conn.—p. 375.

Titrimetric Adjustment of Hydrogen Ion Concentration of Bacteriologic Culture Mediums. I. C. Hall, Berkeley, Calif.—p. 387.
Aroma Producing Micro-Organisms. V. L. Omelianski, Petrograd, Russia.—p. 393.

Morphology of Bacteria.—Bergstrand discusses several theories concerning peculiar forms in bacteria supposed to be organs of sexual and asexual multiplication. He also describes some spherical, ovoid or club-shaped bodies found by himself with *B. typhosus, V. cholerae, Corynebacterium diphtheriae* and other species, which he regards as chlamydospores.

Journal of Biological Chemistry, Baltimore

56: 701-939 (July) 1923

*Determination of Titratable Alkali of Blood with Dinitrosalicylic Acid. J. B. Sumner and R. S. Hubbard, Clifton Springs, N. Y.—p. 701.
*Fatty Acids of Blood Plasma. W. R. Bloor, Rochester, N. Y.—p. 711.
*Improved Procedure for Metabolism Experiments. G. R. Cowgill, New Haven, Conn.—p. 725.
*Glycolysis in Diabetic and Nondabetic Blood. W. Denis and U. Giles, New Orleans.—p. 739.
Studies of Carbon Dioxid Absorption Curve of Human Blood. III. Form of Absorption Curve Plotted Logarithmically with Convenient Type of Interpolation Chart. J. P. Peters, New Haven, Conn.—p. 745.
"Permutit" As a Reagent for Amines. J. C. Whitehorn, Waverley, Mass.—p. 751.
Studies of Gas and Electrolyte Equilibria in Blood. V. Factors Controlling Electrolyte and Water Distribution in Blood. D. D. Van Slyke, H. Wu and F. C. McLean, Peking, China.—p. 765.
Presence of Yeast Growth-Promoting Vitamin in Cane Sugar. C. Funk and L. Freedman, New York.—p. 851.
Amino-Acid Nitrogen of Blood. I. Total Free Amino-Acid Nitrogen in Blood. N. F. Blau, New York.—p. 861.
Amino-Acid Nitrogen of Blood. II. Diamino Nitrogen in Protein Free Blood Filtrate. N. F. Blau, New York.—p. 867.
Amino-Acid Nitrogen of Blood. III. Study of Occurrence of Peptid Nitrogen in Blood. N. F. Blau, New York.—p. 873.
Preparation of Creatinin from Creatin. G. E. and W. S. Hinegardner, University, Va.—p. 881.
Dye Protein Aggregates. I. Congo Fibrin. L. F. Shackell, Chicago.—p. 887.
Growth Promoting Substances of Bacterial Origin. S. R. Damon, Baltimore.—p. 895.
Studies on Enzyme Action. XXIV. Kinetics of Ester-Hydrolyzing Actions of Some Tissue and Tumor Extracts. K. Sugiura, H. M. Noyes and K. G. Falk, New York.—p. 903.

Determination of Titratable Alkali of Blood.—A modification of the Greenwald and Lewman method for the determination of titratable alkali of the blood is described by Sumner and Hubbard. A table of results on different types of cases is given in which a comparison is made between the titratable alkali content of the blood and the carbon dioxid combining capacity of the plasma. In general, the two methods gave results which were roughly parallel, but in a case which showed retention and which was receiving alkali therapy, the amount of titratable alkali was increased by the treatment out of proportion to the increase in the carbon dioxid combining capacity of the plasma.

Fatty Acids of Blood Plasma.—The presence of highly unsaturated fatty acids in normal blood plasma is shown and its significance is discussed by Bloor. The evidence indicates that, in agreement with earlier work, the fatty acids of fasting blood plasma are present in definite compounds which exist in a definitely balanced relation to each other and also that the composition of the compounds with respect to saturated and unsaturated fatty acids is quite constant through the range of species examined and over a considerable range of total lipoid values.

Improved Metabolism Experiments.—The new procedure for metabolism experiments which Cowgill suggests utilizes his determination of the minimum dose for dogs of vitamin B in terms of a yeast vitamin powder, when the animal is fed under certain definite conditions. The first important principle on which the new procedure is based is that the diet for the dog shall consist of a mixture of isolated food substances which, when fed, will supply the body with everything that is necessary for proper nutrition (except vitamin B), or which lacks only one thing (other than vitamin B); namely, the variable under consideration. The second important principle followed is that the vitamin B shall be administered apart from the food mixture above mentioned. Cowgill had devised a new salt mixture utilizing the principle of supplying in the food daily an amount of each of the various inorganic substances equal to or slightly in excess of that eliminated through the kidney by a normal organism during twenty-four hours, these amounts being expressed in terms of grams eliminated per kilogram of body weight per day; at the same time this mixture offers to the body certain constituents in fairly normal ratios to others—sodium to potassium, for example.

Glycolysis in Diabetic and Nondiabetic Blood.—It has been found by Dennis and Giles that glycolysis in normal blood is much more active than in the blood of persons suffering from fairly severe diabetes. In the blood of two persons dying from diabetic coma practically no glycolysis took place even after standing for twenty-four hours. These findings are explained on the assumption that in normal subjects the "blood sugar" consists of gamma glucose which is readily attacked by the glycolytic enzyme, while in persons suffering from severe diabetes probably only a small portion of the reducing bodies consists of gamma glucoses, the main portion being the α-β form which the glycolytic enzyme is powerless to attack, The amount of glycolysis obtained bears no relation to the concentration of the blood sugar.

Journal of Radiology, Omaha

4: 221-260 (July) 1923

Radiography in Examination of Urinary Tract. C. G. Sutherland, Rochester, Minn.—p. 221.
Measurements on Two American Deep Therapy Machines; Duane Method. G. E. Pfahler, Philadelphia.—p. 225.
Roentgen-Ray Treatment of Tumors. E. L. Jenkinson, Chicago.—p. 229.
Roentgen Rays and Roentgen-Ray Apparatus; An Elementary Course. J. K. Robertson, Kingston, Can.—p. 233.
Present Status of Radiation Therapy; Case Reports. J. T. Stevens, Montclair, N. J.—p. 239.
Practical Problems in the Administration of High Voltage Roentgen Ray. R. H. Milwee, Dallas, Texas.—p. 244.
Bone Metastases Following Breast Carcinoma. T. H. Plank, Chicago.—p. 247.
Obstructing Foreign Body in Esophagus Unknown to Patient. E. L. Jenkinson, Chicago.—p. 248.

New Jersey Medical Society Journal, Orange

20: 217-252 (July) 1923

Pay Clinics. E. V. Delphey, New York.—p. 220.
Tuberculosis of the Hip in Children. J. H. Marcus, Atlantic City.—p. 223.
Lesions of Chest Most Frequently Mistaken for Pulmonary Tuberculosis. M. I. Marshak, Bayonne.—p. 226.
Mental Hygiene; Some of Its More Important Aspects. J. F. W. Meagher, Brooklyn.—p. 229.
Dietetics. D. E. English, Summit.—p. 237.
Twenty-Three Cases of Foreign Bodies in Esophagus and Bronchus. H. B. Orton, Newark.—p. 240.

Northwest Medicine, Seattle

22: 225-262 (July) 1923

Angina Pectoris. H. Brooks, New York.—p. 225.
Histologic and Clinical Studies of Cervical Carcinoma Treated with Gamma and Roentgen-Rays. H. Schmitz, Chicago.—p. 232.
Appraisal of Endocrinology. R. G. Hoskins, Columbus, Ohio.—p. 237.
Technic to Reduce Incidence of Headache Following Lumbar Puncture in Ambulatory Patients with Plea for More Frequent Examination of Cerebrospinal Fluids. H. M. Greene, Portland, Ore.—p. 240.
Common Sense Standardization Versus Tradition and Routine in Surgical Care of Patient. W. Kelton, Seattle, Wash.—p. 246.

U. S. Naval Medical Bulletin, Washington, D. C.

19: 1-114 (July) 1923

Foreign Bodies of Dental Origin in Air and Food Passages. L. H. Clerf.—p. 14.
Surgical Treatment of Chronic Suppurative Pericementitis. W. L. Darnall.—p. 16.
Manipulation of Amalgam. H. E. Harvey.—p. 21.
Relation of Modern Dentistry to Group Diagnosis as Conducted at Naval Hospital, San Diego, Calif. L. C. Montgomery.—p. 27.
Tropical Duty as Predisposing to Gingivitis. P. S. Tichey.—p. 31.
Manipulation of Modeling Compound and Sectional Modeling Compound Impression Technic. J. J. Haas.—p. 34.
Wiring Method of Treatment for Fractures of Mandible. E. H. Tennent.—p. 38.
Use of Modified Baker Anchorage in Nasal Dental Service. W. L. Darnall.—p. 42.
Cementation. H. E. Harvey.—p. 45.
Clean Cotton Pellets. H. E. Harvey.—p. 49.
Field Service Instruction for Dental Officers of Navy. J. V. McAlpin.—p. 51.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 165-214 (Aug. 4) 1923

Insulin. J. J. R. Macleod.—p. 165.
Relation of Faulty Nutrition to Development of Epithelioma Contagiosum of Fowls. R. McCarrison.—p. 172.
Radiographic Localization of Spinal Lesions by Sicard's Method. P. Sargent.—p. 174.

China Medical Journal, Shanghai

37: 541-624 (July) 1923

*Intermediate Host of Schistosoma Japonicum in China. I. Its Discovery in Soochow Region. H. E. Meleney and E. C. Faust.—p. 541.
Id. II. Its Distribution in China. H. E. Meleney and E. C. Faust. —p. 545.
Contused and Lacerated Wounds of the Soft Parts. R. F. Maddren. —p. 554.
*Case of Wounded Chinese with Knife Inside Abdomen. G. W. Hollings and B. R. Vickers.—p. 560.
Treatment of Leprosy. L. S. Huizenga.—p. 567.
Treatment of Leprosy with Dean's Derivatives of Chaulmoogra Oil. G. L. Hagman.—p. 568.
Hookworm Problem in China. N. Bercovitz.—p. 576.
*New Theory as to Causation of Sprue and Results of Treatment Based Thereon. H. H. Scott.—p. 581.
*Unusual Case of Lead Poisoning. J. L. Maxwell.—p. 584.

Schistosoma Japonicum in China.—The habit of the mollusk called by Heude, *Hemibia,* which acts the intermediate host of *Schistosoma japonicum* in the endemic region about Soochow, China, is described in detail by Meleney and Faust. Possible seasonal variations of its habitat in this region are suggested. Possible variations of its habitat in other endemic regions of China are discussed. Evidence is offered that the intermediate host of *Schistosoma japonicum* probably exists in regions not yet endemic for the disease, and that the disease is still spreading in China. A simple method is described for determining infection of a given snail by *Schistosoma japonicum.*

Knife Disappears in Abdomen After Stabbing.—A Chinese, aged about 34, gave a history of having been stabbed in the abdomen, and stated that the weapon had disappeared inside. It was five days since the injury and he walked to the hospital. He did not complain of a great deal of pain, and his pulse was only 90 per minute and of good volume. On examination there were two wounds: one in the right rectus muscle, about 2 inches below the umbilicus; the other in the left rectus muscle below the sterno-xiphoid articulation. There was no rigidity of the abdomen, nor fluid in the flanks, but the liver dulness was absent even in the midaxillary line. On probing the wound in the left rectus, a hard object was felt at the bottom of a sinus, about 1½ inches long, leading downward and slightly outward. On opening the peritoneum, there was no escape of gas or fluid. The haft of the knife was seen almost surrounded by omentum. The blade was bent at an acute angle behind the stomach. After some difficulty it was extracted. No hemorrhage or escape of bowel contents followed its withdrawal. The patient died in collapse within twenty-four hours. A necropsy was not permitted.

Causation of Sprue.—Scott's theory is this: in endemic areas the conditions are such that there is an excessive proteid or fatty diet, or a method of cooking which tends to lead to an acid dyspepsia, combined often with an excessive ingestion of citrates in fruit which may combine with the calcium. Excess of proteins stimulates overproduction of acid in the gastric juice, or, what amounts to the same thing, may lead to a higher working level of acid; that is, habitual overacidity; or the fatty diet and the monotony of the food lead to a lowering of digestive activity, whereby fermentation, catarrh, dyspepsia and intestinal toxemia result. The entrance of acid into the duodenum stimulates the production of secretin, so there is habitual overproduction of secretin; overproduction of secretin leads to overstimulation of the pancreas, with the resultant hypersecretion from this organ, and, secondarily to this, an upset in the balance of other endocrine glands, among them the salivary glands and the parathyroids. Again, the diet above mentioned sets up, or tends to lead to, a condition of intestinal toxemia, or allows the growth of some organism which itself sets up such intestinal toxemia.

Lead Poisoning.—Maxwell records a case of lead poisoning in a woman whose work was to melt down counterfeit dollars, which were mainly composed of lead, in order to recover from them such silver as they contained. This, apparently, was the only source from which the infection could have been derived.

Indian Medical Gazette, Calcutta

58: 289-350 (July) 1923

Clinical Kala-Azar Work Performed at Special Kala-Azar Hospital Shillong During 1922. H. E. Shortt and R. T. Sen.—p. 289.
*Evidence of Cure in Treatment of Kala-Azar by Antimony. F. P. Mackie and H. C. Patni.—p. 293.
*Globulin Opacity Test for Kala-Azar. U. N. Brahmcharia and P. B. Sen.—p. 295.
Thirty Years' Experience of Kala-Azar in Nowgong District of Assam. J. D. Price.—p. 296.
Incidence of Kala-Azar in Bengal. L. E. Napeir.—p. 299.
Epidemiologic Study of 663 Cases of Kala-Azar Admitted to Madras City Hospitals Between 1913-1922. J. Cunningham and P. S. Varadarajan.—p. 301.
Results of Treatment of Cases of Kala-Azar Admitted to the Madras City Hospitals Between 1913-1922. J. Cunningham and P. S. Varadarajan.—p. 307.
Kala-Azar in Madras Presidency Outside Madras City. J. Cunningham and P. S. Varadarajan.—p. 308.
*Iodin in Treatment of Malaria, Kala-Azar and Smallpox. J. J. A. Brachio.—p. 311.
Unusual Complication (Hemoperitoneum) in Kala-Azar. H. Chatterjee. —p. 313.
New Instrument for Taking Uncontaminated Swabs from Interior of Uterus. N. Gupta.—p. 314.
Case of Acute Intestinal Obstruction. F. J. W. Porter.—p. 315.
Stab Wound of Enlarged Spleen. L. W. Hefferman.—p. 315.
Unusually Large Supraclavicular Lipoma. G. C. Ramsay.—p. 316.

Antimony Cures Kala-Azar Patients.—Mackie and Patni assert that the generally accepted "full course of treatment," namely, 200 c.c. of a 1 per cent. solution of sodium antimony tartrate, is in many instances ineffective in curing the case. Each case must be treated on its merits and a hard and fast limit of treatment abandoned. Treatment should be continued till all or most of the clinical criteria of cure are evident. Even when all these favorable signs are present the patient may still be harboring living *Leishmania* and, therefore, the only real evidence of cure is the failure to grow the parasite from material obtained by splenic puncture. Microscopic examination of the splenic juice is, by itself, insufficient to prove cure. There is a real danger to be apprehended from insufficiently cured cases as these may in all probability act as chronic carriers of infection in the community.

Test for Kala-Azar.—A test is described by Brahmachari and Sen, the globulin opacity test, for kala-azar; if in any case the height of globulin precipitated by diluting the serum with 6 parts of distilled water and estimated in the way described is 1.25 inches or less, then it may be regarded as fairly diagnostic of kala-azar.

Iodin in Treatment of Malaria, Kala-Azar and Smallpox.—Brachio prefers tincture of iodin to quinin in the treatment of malaria. He gives 10 drop doses, three time a day, for about ten days. An attack of fever treated with iodin does not relapse. Cases that resisted oral treatment with iodin up to the fourth or fifth day, were given one or two intravenous injections of ¼ grain of iodin which was sufficient to bring the temperature to normal and to keep it there. In the treatment of kala-azar, iodin by mouth and intravenously has given the best results. Forty minims of the following solution are given at a time: Iodin, 6 grains (0.4 gm.); potassium iodid, 6 grains (0.4 gm.); distilled water, 1 ounce (30 c.c.). This quantity is injected intravenously every other day up to five injections and then 10 drops of tincture of iodin is given by mouth, three times a day, for a week. Brachio also uses tincture of iodin externally and internally in the treatment of smallpox, intravenously for carbuncle, internally for dysentery and diarrhea, and intravenously for gonorrhea.

Lancet, London

2: 211-266 (Aug. 4) 1923

*Should Infant Mortality Be Reduced? F. E. Wynne.—p. 211.
Vasostomy for Seminal Vesiculitis: New and Improved Technic for Operation. F. Kidd.—p. 213.
Case of Parenchymatous Hypertrophy of Breasts. D. C. L. Fitzwilliams. —p. 218.

*Digestive Function in Pulmonary Tuberculosis. J. G. Hislop.—p. 221.
*Traumatic Rupture of Hydronephrosis. H. W. L. Molesworth.—p. 224.

Relation of Heredity and Environment to Infant Mortality.—Wynne examined the records of 100 deaths of infants who had been under the care of a child welfare center and of whose home conditions and heredity he had some knowledge. Of these 100 deaths, twenty-three were due to prematurity and definitely congenital conditions; thirty-nine to respiratory diseases, and twenty-four to diarrheal diseases, the balance of fourteen being due to other causes. In order to test whether there was a probable correlation of deaths from these causes with hereditary and environmental conditions, Wynne took the employment of the father and the home conditions as indices of heredity and environment. The percentage of second class parentage among children dying of congenital causes was very much greater than in children dying of respiratory disease, and considerably greater than in children dying of diarrheal diseases. The percentage of slum conditions is also much greater among the congenital deaths, doubtless because slum conditions are largely an index of parental degeneracy. The percentage of slum conditions among infants dying of diarrheal diseases is surprisingly low, but this is accounted for by the fact that breast feeding in Sheffield is the rule among the poorest classes, and the incidence of diarrhea is, therefore, slightly higher in the class just above the lowest. The figures are small, but the results show a definite correlation between heredity, environment, and deaths from these three groups of diseases.

Digestive Function in Pulmonary Tuberculosis.—It is suggested by Hislop that the usual effect of tuberculosis on the digestive function is one of inhibition, the quality and quantity of the gastric secretion depending on (1) the degree of inhibition, and (2) the quality and quantity of the secretion prior to the tuberculous onset. Indigestion in hypochlorhydria is never severe and readily yields to treatment directed toward stimulation of gastric secretion. Hunger pain coming on two hours or more after a meal is the predominant symptom, which is temporarily relieved by the ingestion of food. The second type is the more common. The symptoms are: flatulence, pain, nausea and vomiting. The main feature is intolerance of fats alone or in a mixed diet. Soups are often avoided because of the fat, and fat is cut off bacon unless it be crisp, while milk or milk and egg is felt to increase the symptoms. Cod liver oil and malt and milk are disliked by the majority of tuberculous subjects, and almost universally when dyspepsia is marked, but numbers take both even when they disagree, simply on account of medical advice. The treatment consists in keeping the mouth and teeth clean by an acid mouth wash used each night and morning. Diluted nitrohydrochloric acid should be given in doses of from 10 to 30 minims (0.7 to 2 c.c.) before or during each meal. Aperients should be taken when needed. No dyspeptic patient should be required to take an excessive diet. Milk should be given in moderation, and the addition of sodium citrate will often overcome difficulty in the assimilation of moderate or reduced amounts. Any mixture of proteins with fats in a liquid form should be avoided. Meats are better cooked in their own juices; milk should not be given with meals at which meat is served; fish should not be fried in oils; the fat with meat, for example bacon, should be crisped. Carbohydrates should be served at meat meals.

Traumatic Rupture of Hydronephrosis.—Molesworth adds one to the eleven cases on record. His patient slipped from a chair on which she was standing and struck her left side a moderate blow against a sharp edge. Immediately she suffered violent left-sided abdominal pain, and shortly afterward vomited. Pain continued, and next morning a nephrectomy was done. The only difficulty was in distinguishing the collapsed sac from the descending colon. The specimen was a thin-walled left hydronephrosis of congenital type.

Medical Journal of Australia, Sydney

1: 715-728 (June 30) 1923

Possibilities of Organization of Profession Throughout State in Treatment of Accidental Injuries. F. A. Hadley.—p. 715.
*Treatment of Inequality of Length in Lower Limbs. N. D. Royle.—p. 716.
*Two Pancreatic Functional Tests. G. Cameron.—p. 718.
Rupture of Deep Femoral Artery in Patient with Infective Endocarditis. J. Macnamara.—p. 724.

Treatment of Inequality of Length in Lower Limbs.—Of five patients with unequal length in the lower limbs, the cause of the inequality in four was anterior poliomyelitis; in the fifth, osteomyelitis was responsible for the loss of a section of the shaft of the right tibia. In four instances shortening was carried out by Royle by exsecting a piece of the femur. In each instance the femur was approached from the lateral aspect just above the line of the lateral intermuscular septum. The length to be removed was first of all marked on the periostum and the bone was then divided by means of a hand drill. The bone was drilled from the lateral aspect in three places so that when complete there were actually six drill holes in the circumference of the bone. It was then easy to cut with a sharp osteotome between the drill holes and remove the section of bone with a minimum of trauma. This method has the advantage of leaving surfaces which interlock easily and do not present the possibility of failure to unite from dearth of bone cells in the approximated areas. An intramedullary splint to prevent lateral displacement of the two divided ends was made from the exsected piece of bone. In the fifth case a piece of tibia was removed.

Two Pancreatic Functional Tests.—Cameron has used the epinephrin eye test and has estimated the diastasic content of the urine in 161 cases. In pancreatic disease, the eye test generally yielded a reaction. Uniformly positive results were obtained in patients with conditions of increased thyroid activity and disturbances of other endocrine glands. In patients with arthritis deformans of the general progressive or monarticular forms a reaction was often obtained. Patients with diabetis mellitus often failed to yield reactions. The measurement of the diastasic content of the urine was originally introduced by Wohlgemuth. The urine of a patient with acute pancreatitis showed a diastasic value of 70 units before operation. In the patients with subacute pancreatitis the urinary diastasic values varied between 50 and 150 units and gradually decreased as the patients improved. In the urine of a patient with chronic pancreatitis, a value of 50 units was obtained. In the urine of three patients with carcinoma, the values were, respectively, 10, 20 and 4.

2: 1-26 (July 7) 1923

Clinical Interpretation of Blood Pressure Readings. C. B. Blackburn.—p. 1.
"Mestizos of Kisser" and Problem of Acclimatization of European Races in Tropics. E. Rodenwaldt.—p. 6.
Treatment of Syphilis by Bismuth Salts. L. P. Carvell.—p. 8.
*Appendicitis Complicated by Septic Portal Thrombosis. A. W. Farmer.—p. 8.
Case of Total Deafness and Aphonia Following Severe Shock (Burn). R. Francis.—p. 10.
Acute Sigmoiditis: Perforation and General Peritonitis Following Rectal Injection. C. MacDonald.—p. 10.

Appendicitis Complicated by Septic Portal Thrombosis.—Farmer records the case of a woman, aged 25, who complained of acute and continuous pain in the abdomen for twelve hours. The pain was situated in the epigastrium and the lower part of the abdomen and was severe on the left side. The pain did not radiate. The patient had vomited once during the night, the vomiting having been induced to ease the pain. The bowels were constipated. There was no history of previous attacks. There were no signs of jaundice; micturition was normal; the menses had been regular. On examination, the tongue was found to be moist and particularly clean; the heart and lungs were clear; the abdomen moved well on respiration, but was somewhat rigid on the right side only, both in the upper and lower regions. There was tenderness in the epigastrium on the right side, with, perhaps, the maximum tenderness in the right iliac fossa below McBurney's point. On vaginal examination the uterus appeared normal; there was tenderness in both fornices with some fulness in the left. At operation the appendix was found congested and bound down by adhesions, the lumen being occluded just beyond its midpoint. The appendix was removed; the pelvic organs were found normal and the abdomen was closed. On section the appendix showed acute ulceration proximal to the obstruction with pus in the lumen.

On the next evening the patient's abdomen became distended; she was parched and distressed with rising temperature and pulse rate. Relief was given by means of appropriate treatment. All went well until the sixth day after operation, when the temperature and pulse rate again began to rise; she became restless and complained of pain in the right flank. That evening a round worm measuring 20 cm. (8 inches) was passed by the bowel. The next day she passed 230 c.c. of dark blood by the bowel and a mass was palpable in the right hypochondrium. The patient was also intensely jaundiced and her condition was rapidly becoming critical. A second laparotomy was performed. High up in the right kidney pouch a pocket was opened containing dark blood and a small quanity of purulent fluid. It was impossible to locate the source, so two large drainage tubes were inserted and the abdomen closed. The condition was by this time desperate and remained so for the next three days. The intense jaundice persisted for this period and then began to diminish. The respiration was sighing and rapid and the pulse was about 150 in rate and barely perceptible. After the third day the condition improved somewhat with free discharge of blood stained pus through the tubes. The patient steadily improved until the thirteenth day after the operation, when breathing became distressed and more rapid, with elevation of temperature and pulse. On examination of the chest, dulness, diminished vocal resonance and fremitus were detected over the base of the right lung, extending upward to just above the angle of the scapula. On the next day a record syringe was passed into the right pleural cavity between the seventh and eighth ribs posteriorly and slightly purulent fluid was withdrawn. The cavity was then aspirated and 450 c.c. of fluid withdrawn. The next day the patient passed 280 c.c. of blood stained, offensive material by the bowel. From this time she gradually improved and made a complete recovery.

Annales des Maladies Vénériennes, Paris

18: 337-416 (May) 1923

Syphilis at Conception. J. Golay.—p. 337.
*Intramuscular Arsenical Treatment of Syphilis. R. Rabut.—p. 351.
Necessity for Medical Supervision of Regular Clandestine as Well as of Licensed Prostitution. L. Bizard.—p. 354.
*Inadequate Preventive Treatment of Syphilis. Gouin and Jégat.—p. 368.

Intramuscular Injection of Arsenicals.—Rabut relates some experiences which show that the intramuscular route for injection does not prevent toxic manifestations from the arsenicals. The pain from the intramuscular injection is often intolerable, and a large nodule may develop, so there is no advantage from using this route.

Inadequate Preventive Treatment of Syphilis.—Gouin and Jégat report a case in detail in which the man was given a total of 1.95 gm. of neo-arsphenamin, in four injections at six or seven day intervals. The wife had been under treatment for secondary syphilis when the husband returned from a two years' absence, and she was told to bring the husband for examination. A chancre developed the ninety-fifth day after the infection, and the inadequate treatment seemed to have conferred a malignant character on the syphilis. The chancre recurred, and the tongue and palate ulcerated, notwithstanding resumption of vigorous treatment. The ulceration resisted arsenicals and mercury, but healed under bismuth the ninth month after infection. The Wassermann reaction had been positive only during the fifth month.

18: 497-576 (July) 1923

Pentavalent Arsenic Derivative in Treatment of Syphilis. C. Laurent.—p. 497.
Sodium Tartrobismuthate in Treatment of Skin Disease and Syphilis. Parreiras Horta.—p. 520.
*Traumatism Influencing Site of Syphilids. Halbron and Barthélemy.—p. 526.
Gonococci in Scrotal Abscess from Gonorrheal Orchitis-Epididymitis. Matarasso.—p. 529.

Trauma Produces Local Predisposition to Syphilids.—In the first of the two cases described, the lesion in the right palm had proved refractory for a year under treatment with the usual local measures. The man was a shoemaker, and his tools fitted into the palm affected. The positive Wassermann reaction pointed the way to effectual treatment, as in the second case in which the lesions were between the right scapula and the spine. They had been mistaken for lupus, but subsided under specific treatment. The region showed the traces of cautery for neuralgia four years before.

Annales de Médecine, Paris

13: 391-494 (May) 1923

*Prophylaxis of Tuberculosis in Infants. Bernard and Debré.—p. 391.
*Incubation Period of Typhoid Infection. De Lavergne.—p. 421.
Diverticulosis and Diverticulitis of the Large Intestine. R. Bensaude, A. Cain and P. Hillemand.—p. 433.
Basal Metabolism. H. Stevenin and H. Janet.—p. 459.

Tuberculous Infection of Infants and Its Prophylaxis.—Bernard and Debré deny the heredity of tuberculosis. Only 14 per cent. of infants of 127 tuberculous mothers examined by them were born before term, and the physical development was normal in 70 per cent. They are infected from the mother and others, through the milk in nursing, sensitiveness to infection being most pronounced during the first two weeks. Infants exposed to contagion for six months rarely escape infection. Prophylaxis consists in separating the infant from the source of contagion before infection has taken place.

The Incubation Period in Typhoid.—De Lavergne reports extensive research on rabbits which has convinced him that the essential characteristics of human typhoid are the long duration of the incubation period (two weeks) and the progressive and extensive invasion of the mesenteric chain of lymph glands. Neither the septicemia nor the contingent intestinal lesions are essential features of typhoid fever in man. After ingestion, the typhoid bacilli pass into the lymphatic vessels of the intestine. This induces an ordinary local inflammatory process. The anatomic manifestation of this is hypertrophy; the biologic manifestation of it is a sensitization. When, two weeks later, the bacilli that have got into the blood are returned to the bowel from the blood, thus reaching the bowel a second time, they find the lymphatic vessels sensitized by their previous passage. The reaction consequently is different this time. In the rabbit there is no incubation period, no reaction on the part of the mesenteric glands, and only slight and transient septicemia. In man, there is a lively reaction in the mesenteric lymphatic vessels, long period of incubation, and severe and prolonged septicemia.

Archives des Maladies de l'App. Digestif, Paris

13: 521-624 (June) 1923

*Ulcer of Ascending Colon. J. Chalier and Mallet-Guy.—p. 521.
*Retention Tube in the Stomach. D. Simici and E. Voiculesco.—p. 533.
*Complications of Cancer in Esophagus. Hanns and Joublot.—p. 560.
Functioning of Stomach in Diaphragmatic Eventration. E. Fatou and A. Lucy.—p. 566.
*Means for Detecting Occult Bleeding in Digestive Tract. I. Iovin.—p. 582.

Simple Ulcer of Ascending Colon.—Absorption from an ulcer in the stomach is less dangerous, from the standpoint of infectious consequences, than absorption from an ulcer in the colon. In a case of the latter described, intestinal hemorrhage was the first symptom to attract attention. There was a tendency to diarrhea, and the right iliac fossa was tender; this fixed tenderness corresponded to the ulcer. Pains above the umbilicus, three hours after eating, and contracture of the abdominal wall were evidently the result of reflex spasm of the pylorus. Necropsy revealed a simple ulcer of the linear type. Old tuberculous lesions were evident, especially in the pleura and suprarenals.

Prolonged Intubation of the Stomach.—This communication from Bucharest describes the findings in normal and pathologic stomachs with an Einhorn tube left in the fasting stomach for several hours, the contents being aspirated at half hour intervals. Thirty-three subjects were thus examined, and the findings in five are analyzed in detail, as also in a case of gastric cancer, one of syphilis of the stomach, one of plastic linitis, and two of the twelve cases of hyperchlorhydria without ulcer. The fasting stomach was never found empty. There was always from 20 to 80 c.c. of fluid in the normal fasting stomach, and as much as 195 c.c. was sometimes secreted in two hours.

Fistulas into Air Passages with Cancer in the Esophagus.—The man in the case described was unable to pass the

food into the stomach unless he bent forward and coughed hard, compressing the stomach with his hand. This may have been responsible for the fistulas into the bronchi.

Occult Hemorrhage in Gastro-Intestinal Tract.—Iovin concludes from his comparative tests with the various technics in vogue, that the Gregersen test (with 0.5 per cent. benzidin) is the best for general use. It is simple, easy, and sensitive enough. If a control test is desired, the Boas method with alcohol and chloral hydrate is advisable. He charts the comparative findings in the stools from 156 persons, including twenty-four healthy persons, who had not been eating meat, and five healthy persons after administration of hemoglobin.

Bulletin Médical, Paris

37: 763-790 (June 30) 1923

*Arsenical-Mercurial Treatment of Tabes. J. A. Barré.—p. 769.
*Multiple Joint Lesions in Tabes. T. Alajouanine.—p. 771.
*Biologic Tests in Tabes. T. Alajouanine and R. Marquézy.—p. 778.
*Incipient Tabes. P. Morin.—p. 783.

Treatment of Tabes.—Barré reports the usual discouraging results from arsenical, mercurial and bismuth treatment of tabes.

Polyarticular Lesions in Tabes.—Alajouanine reproduces twenty roentgenograms from men with tabes showing extensive deformity of many large and small joints. The other nervous symptoms of tabes were mild in one case, and the man was able to walk notwithstanding the joint lesions. The polyarthropathic type of tabes testifies to the trophic element in tabes.

Biologic Tests in Tabes.—The findings in the cerebrospinal fluid with different tests are charted for comparison in forty cases of different stages of tabes. In some stationary cases the fluid responded normally to every test.

Diagnosis of Incipient Tabes.—Morin calls attention to the loss of the biceps femoris tendon reflex—even on one side—as the most reliable early sign of tabes. The reflex is a contraction of the biceps femoris elicited by tapping its tendon in the popliteal space, just above the head of the fibula. This *réflexe péronéo-fémoral postérieur* was described by Guillain and Barré in 1916, and experience has confirmed the value of its abolition as an early objective sign of a tabetic lesion. In a case described, atrophy of the optic nerve had developed after an accident to the head. There were no symptoms except the impairment of vision and the abolition of this biceps femoris reflex, but during the following year other symptoms of tabes slowly developed. The evolution of tabes is progressive, except for longer or shorter stationary periods, and the progress is a regular progression from below upward. Hence the reflexes in the legs are the first to show the effect. He has never encountered a case of tabes with loss of reflexes in the arms while those in the legs were intact. He noted sphincter disturbances in 58 per cent. of his hospital cases of tabes. This begins usually as a slight difficulty in voiding urine, alternating with incontinence. Both are transient and variable. In 37 tabetics examined, the sexual functions were normal in 21 and normal except for partial loss of desire in 4 others. There was impotency or diminished sexual function in only 11, and 8 of these patients were over 50 years of age. In all but one in this group, the tabes was of long standing. Disturbance in sexual function, therefore, cannot be regarded as an early sign of tabes.

37: 793-820 (July 7) 1923

*Action of Insulin in Diabetes. H. Chabanier et al.—p. 799.

Action of Insulin in Diabetes.—This study of the physiopathology of acidosis and the action of insulin in diabetic coma and impending coma, confirms the importance of the glycemia after ingestion of a given amount of glucose as a gage of the tendency to acidosis. "The hyperglycemia of the diabetic is a compensatory process, like the hyperazotemia in nephritis." The data presented explain that the acetonuria in diabetes, in infectious and toxic conditions, in starvation, and in cyclic vomiting, is always traceable to the glycemia being below a given ratio in relation to the fat radicals. Ingestion of glucose, increasing the glycemia, dispels the acidosis. In one grave case of diabetes, the acetonuria reappeared whenever the glycemia dropped below 0.8 per cent. "The introduction of insulin has solved the problem in another way, realizing a long sought ideal."

37: 883-910 (July 28) 1923

*Notification of Syphilis.—p. 889.
*Syphilis in Infants. M. Pinard.—p. 894.
Allergy in Syphilis. P. Gastinel and A. Boutelier.—p. 897.
Arthralgia in Syphilis. P. Blum.—p. 900.

Notification of Syphilis.—The advisability of compulsory notification of syphilis has met with overwhelming denunciation from French physicians, with a single exception. A number of letters on the subject are published here. Carle describes the astonishment of the majority of the French delegates to the International Medical Congress in London when they learned next day that a unanimous vote had been taken recommending compulsory notification. "The bustle of leaving for lunch at the noon hour, and the confusion of languages had facilitated the prestidigitation and camouflage methods with which the resolution—proposed by Scandinavian delegates and strongly endorsed by the president, Malcolm Morris—had been presented and voted on." He adds that syphilis is cured by drug treatment and not by official decrees. Syphilis is retreating before our present methods of attack. A full-fledged chancre is becoming a rarity, almost a curiosity. But if compulsory notification should be decreed, it would empty at one stroke all our dispensaries and consultations. Pathault of Biarritz declares that public hygiene has too long been passive and negative. "Prohibition, notification and all such measures merely lead to concealment and neglect. Public hygiene should be positive and active, The first and most important measure is to protect the sick against exploitation by quacks." . . . "The tuberculous, the syphilitic, the cancer cases are victims of the advertising pages of many journals. The public press should not be allowed to publish advertisements of medicine, and the sale of proprietaries without a physician's prescription should be forbidden." Other replies were summarized in the Paris Letter, p. 842.

Treatment of Syphilis in Young Infants.—Pinard declares that the reliance must be on arsenicals in progressive doses, by the vein or subcutaneously. Bismuth does not seem adapted for infants. "Mercury has rendered some service, but it has made many victims to the hypocrisy of society, adding to the number of cases of dystrophy, mental deficiency and asthenia, and preparing the soil for tuberculosis and cancer. By curing inherited syphilis early we will do more to eradicate tuberculosis and cancer than by any of the measures now in vogue."

Bulletins de la Société Médicale des Hôpitaux, Paris

47: 645-678 (May 4) 1923

*Arsenical Treatment of General Paralysis. R. Targowla.—p. 645.
*Inefficacy of Diphtheria Antitoxin by the Mouth. Carnot and Blamoutier.—p. 652.
*Pulmonary Amebiasis Cured by Emetin. L. Ramond et al.—p. 655.
Aneurysm of Abdominal and Thoracic Aorta. Laubry and Routier.—p. 662.
A Case of Dercum's Disease. Laignel-Lavastine and Largeau.—p. 665.
Cure of Hodgkin's Disease by Radiotherapy. P. Jacob.—p. 668.

Arsphenamin Treatment of General Paralysis.—Targowla recommends Sicard's method of repeated injections of small doses during a long period. He used arsphenamin according to this method in three cases, with a certain improvement in one, scarcely appreciable and temporary in another, and no results in the third. It did not prevent a wave of exacerbation soon after. However, the treatment may be followed by a remission and partial retrogression of the clinical manifestations, especially of insufficient functioning of the kidneys. Decreased permeability to phenolsulphonephthalein was associated with an abnormal ureosecretory constant in nine of twelve cases of general paralysis. Elimination of the dye became normal in his first case and declined in the third, with temporary return to normal at the end of the first series of injections. He refers to Sicard's satisfactory results in a number of cases of general paralysis from injections of 18-20 gm. neo-arsphenamin yearly, subcutaneously or intramuscularly. The Wassermann reaction in the cerebrospinal fluid

generally remains unchanged in general paralysis, even after intensive treatment.

Attempts at Diphtheria Antitoxin Immunization by the Mouth.—Carnot and Blamoutier obtained positive Schick reactions in 19.2 per cent. of 140 adults. To settle the question of possible immunization with diphtheria antitoxin administered by the mouth or rectum, they selected seven positives who took 20 c.c. of the antitoxin by mouth, and eight, 30 c.c. by rectum, and in seven others, 30 c.c. of the diphtheria antitoxin was introduced directly into the duodenum by the Einhorn tube. The Schick reaction continued positive in all. Then they treated these same patients with 20 c.c. of the antitoxin plus 10 c.c. ox-gall, without change in the reaction. One person received 160 and another 180 c.c. by all three ways in five days, with no change. All these persons were free from lesions in the digestive tract. In another group of four with ulceration in the digestive tract or an erosion in the mouth, all with positive Schick reactions, the diphtheria antitoxin was introduced into the digestive tract in quantities of 20 or 30 c.c., with negative reactions in three days. In another case there was no absorption from an external wound treated with diphtheria antitoxin. They conclude that in a healthy state the intestinal epithelium is not permeable for diphtheria antitoxin.

Pulmonary Amebiasis, Without Abscess of the Liver, Cured by Emetin.—Ramond, Denoyelle and Lautman recognized the dysenteric origin of the hemoptysis, in the man, which they attributed to pure pulmonary amebiasis. Having lived a long time in a colony with endemic dysentery, he had suffered an acute attack of amebic dysentery, three years before, which had been cured by emetin. The localization of the physical signs at the base of the right lung and the purulent and bloody sputum indicated rupture of an amebic focus in the bronchi.

Gynécologie et Obstétrique, Paris

7: 369-448 (May) 1923

*Radiotherapy of Uterine Fibromas. P. Bégouin.—p. 369.
Liver Functioning During Pregnancy. P. Couinaud and R. Clogne.—p. 372.
*Extraction of After-Coming Head. L. Bylicki.—p. 388.
*Abnormal Duration of First Stage of Labor. E. Gueissaz.—p. 390.
Atresia of Vagina as Complication of Acute Infectious Diseases. Serdukoff.—p. 412.
Technic for Artificial Partition in Vagina. H. Hartmann.—p. 415.

Hemorrhagic Uterine Fibromas.—Bégouin insists on the necessity for dilating the uterus to inspect it, and thus exclude polyps and submucous fibromas, before applying roentgen-ray or radium treatment.

The After-Coming Head. — Bylicki asserts that the Mauriceau-Smellie-Veit maneuver, the finger applied over the superior maxilla, does not influence the relations between the head and the thorax. All it accomplishes is to decide whether the child is to be born with its mouth open or closed.

Abnormal Duration of First Stage of Labor.—Gueissaz gives a general review of this subject from different standpoints. It is based on experience with 150 cases at the Lausanne maternity. Anomalies in dilatation may be due to extra rigidity of the tissues or to defective labor contractions. Morphin in certain conditions aids, and hot vaginal douches occasionally helped. Full hot baths in case of anomalies in the labor pains often proved effective, especially for excited or impatient, nervous women. Manual dilatation according to Bonnaire was applied when the fetus was suffering. The inflatable bag is a useful but dangerous adjuvant. Instrumental dilatation and incision of the cervix are denounced as unphysiologic.

Paris Médical

13: 389-420 (May 5) 1923

Diseases of Deranged Metabolism in 1923. Linossier and Monod.—p. 389.
*Hormones from Medical Standpoint. L. Hallion.—p. 400.
*Rickets and the Nourishment of the Bones. Mouriquand.—p. 406.
*Diagnosis of Diabetes. M. Labbé.—p. 411.
*Glycemia and Glycosuria after Epinephrin Tests. H. Bierry and F. Rathery.—p. 415.

The Hormones from the Medical Standpoint.—Hallion recalls that by the term hormone we mean a substance that is secreted and passes normally into the blood, and he adds that probably each organ has its own special hormone, not merely the endocrine glands. An extract of a gland contains more than the hormone of that gland, and its action is presumably twofold, supplying the lacking hormone and stimulating the sluggish organ itself to better function.

Rickets and the Nourishment of the Bones.—Mouriquand comments on the essential differences between human rickets and experimental rickets. Some of the severest cases of rickets he has encountered were in infants living in well ventilated and sunny homes. Cod liver oil seems to contain some substance which causes the deposit of calcium in the bones. This action seems to link experimental rickets with the deficiency diseases, but human rickets does not always yield to cod liver oil. Few infants fail to get sunlight. The human soil is prepared by infections of various kinds which interfere with the normal growth of bone, possibly by an indirect phosphorus deficiency, a deficiency in its assimilation. In human rickets, the hyperemia and the proliferation of the bone marrow entail a decalcifying chondromyelitis. This is not apparent in rat rickets, although the rachitic process is histologically identical with the human process. His research on guinea-pigs confirms that the bone reacts differently in different species. Rats never developed scurvy, and it seems to be difficult to induce rickets in guinea-pigs. He urges study of experimental rickets in as many species of animals as possible, and research to discover the reasons why some species are more resistant than others.

Diagnosis of Diabetes.—Labbé discusses, in particular, glycosuria from abnormal permeability of the kidneys for sugar, with normal sugar content of the blood, even after test ingestion of glucose, and also the glycosuria from insufficiency of the liver. In this latter group, the urine contains elements suggesting sluggish liver functioning, in addition to the sugar. The sugar content of the blood, fasting, is normal, and is only slightly increased by test ingestion of glucose. This slight, inconstant and variable alimentary hyperglycemia with insufficiency of the liver deserves study from the standpoint of diagnosis. The prognosis is favorable in these cases of glycosuria from insufficiency of the liver, and they do not require antidiabetic diet. There is no progressive tendency, and conditions usually right themselves when the diet includes less meat and fat and more milk.

Glycemia and Glycosuria After Test Injection of Epinephrin.—Bierry and Rathery remark that the diet preceding, and the preceding glycemia modify the response to the epinephrin test. Their experiments on dogs confirmed further that the effects differed according as the epinephrin was dextrorotatory or levorotatory, synthetic or natural. They comment on the antagonistic action of ergotinin and epinephrin. Ergotinin alone did not seem to affect the sugar content of the blood, but it prevented epinephrin hyperglycemia. There was no parallelism between the hyperglycemia and the glycosuria, after test injection of epinephrin.

13: 421-436 (May 12) 1923

*Gastroptosis. P. Carnot.—p. 421.
*Proteus Vaccine Therapy in Typhus. P. Modinos.—p. 425.
General Principles for Reconstruction of Fractured Bones. R. Soupault.—p. 429.
Pain in Stomach Before Eating. Matignon.—p. 432.

Ptosis of the Stomach.—Carnot says that treatment must be based on the degree of the ptosis, and the elasticity of the stomach and abdominal walls. In the elderly and in those with flabby tissues, the stomach must be rested and supported. In the young, and in all with vigorous and elastic tissues, the reverse should be the rule; the measures should be directed to exercise and strengthen the stomach walls. The majority of cases are between these two extremes, and treatment should be by rest at certain times and exercise at others. With simple gastroptosis, there should be no splashing sound in the fasting stomach, and the stomach tube should show no relics of food. Another test is the time required for the passage from the stomach of 250 c.c. of tepid water, standing and reclining. An instructive test of the resistance of the stomach walls is roentgenoscopic examination after ingestion of 50 c.c. of a contrast suspension. The lowest point reached by

the stomach is marked, and then another 50 c.c. is ingested, and the lowest point reached is marked, and so on. The successive stretching of the stomach is an index of the muscular tonus of the organ. Another means for estimating the tone of the tissues is the rise of the stomach when the abdomen is retracted as the diaphragm is aspirated; the stomach rises considerably when the tone of the abdominal walls and diaphragm is good. With extreme and permanent ptosis, the patient should recline as much as possible, and always after eating, and have small frequent meals, of easily digested extra nourishing food. In the cases promising improvement, the main meal of the day should be taken at evening, and be eaten reclining, thick soups, purées, fruit and green vegetables, without regard to volume and weight, but foods rich in purins should be avoided. Breakfast and lunch should be light, fluid, and small in amount. If raw eggs, skimmed milk (with a little sodium citrate or gelatin to prevent clotting, and hasten its passage from the stomach), and raw chopped meat are taken, they should be followed by reclining on the right side. Exercises to develop the muscles of the anterior abdominal wall will help in the recuperation of muscular tonus by the viscera as well, but in all forms of gastroptosis, reclining during digestion, possibly with the pelvis raised, is the main reliance.

Treatment of Typhus.—Modinos admits that *Proteus* X is not involved in the causation of typhus, but the fact that it is agglutinated by typhus serum suggested that it might serve for vaccine therapy. His experience in twelve cases of typhus with such a vaccine demonstrated, he says, that it certainly attenuated and shortened the disease, and warded off complications, even in the gravest cases. His charts from five cases show the prompt benefit. The vaccine was injected on four successive days.

Revue Franç. de Gynécologie et d'Obstét., Paris

18: 321-352 (May 25) 1923

*Inoperable Cancer of Uterine Cervix. A. Perrola.—p. 321.
Vaginal Hysterectomy in Grave Peritonitis Following Abortion. J. P. Tourneux.—p. 330.
Extra-Uterine Pregnancy Operated on After Fifth Month: Deformity of Fetus: Pus in Digestive Tract. A. Laurentie.—p. 335.

Treatment of Inoperable Cancer of Uterine Cervix.—Perrola compares the outcome in 50 cases before radium was introduced with 63 given radium treatment since 1914. In 28 of the 50 preradium cases, no benefit was derived from the various palliative measures applied. The pains were permanently abolished in only 4 cases, and temporarily in 3. They persisted unmodified in 29 and increased in 14. The longest survival was eighteen months, the average, seven or eight. In the radium-treated group, the survivals ranged from six to sixty-seven months, and 3 are still living, from sixty-six to seventy-four months since the treatment, the average, fourteen months. The radium arrested the hemorrhagic discharge in all but 11 cases, and the pains in all but 13 cases.

Pediatria, Naples

31: 465-520 (May 1) 1923

The Endocrine and the Vegetative Nervous Systems in Children. E. Mensi.—p. 465.
*Habitual Vomiting in Infants. R. Vaglio.—p. 482.
Chloroma in Infant. I. Nasso.—p. 489.
Orthopedic Surgery for Valgus. Deformity from Infantile Paralysis. N. Caprioli.—p. 495.

Habitual Vomiting in Infants.—Vaglio encountered 20 cases of habitual vomiting among the 4,000 infants at the Naples children's clinic (less than 0.5 per cent.). Syphilis was certain or probable in 75 per cent. of this group of 20 infants. The 5 free from suspicion of syphilis all showed nervous hyperexcitability, and the fontanels were taut. Lavergne noted excessive intracranial pressure in 2 of his 3 cases of habitual vomiting, and in one of Vaglio's 5 cases hydrocephalus developed later. He therefore ascribes the excessive reflex excitability of the stomach to the central nervous system. Dollinger comes to the same conclusion, but is inclined to ascribe it to some birth injury of the brain, as there is always a history of difficult delivery in these cases.

Rivista di Clinica Pediatrica, Florence

21: 257-320 (May) 1923

*Acute Acid Intoxication in Children. A. Furno.—p. 257.
*Asphyxia of Infant After Blow on Nose. P. Brusa.—p. 291.

Acute Acid Intoxication in Children.—Furno analyzes the clinical picture in two children long under observation, and the necropsy findings in a boy of 7, who died in a few hours after reaching the hospital. He showed signs of grave acetonemia although previously healthy except that eight months before there had been a week of uncontrollable vomiting. The child died twelve hours after the onset of convulsions and coma; the temperature was normal; the reaction for acetone and diacetic acid was pronounced in the urine, and a strong odor of acetone was evident as the skull was opened. The meninges were intact. The thyroid was large, the structure like that of exophthalmic goiter, and Furno accepts this latent hyperthyroidism as the primary factor. The thymus was unduly large for the age, the hypertrophy involving the cortex. The liver and pancreas were gravely affected secondarily. In the two clinical cases, tuberculous meningitis had been diagnosed at first, until disproved by the normal cerebrospinal fluid and the acetonuria, and the recovery in a week under alkaline treatment: 15 or 20 gm. of sodium lactate daily, in sweetened water, fractioned. He theorizes that the acetonemia is due to abnormal metabolism of fats, and that the acute attack is a phenomenon of probably anaphylactic nature. During the attack, the liver suffers most.

Asphyxia of Infant from Traumatic Occlusion of the Nose.—A blow on the nose had induced a hematoma in the nasal passages. When the nose is obstructed, an infant is liable to apply its tongue against the palate during inspiration; reflex spasm of the glottis is another complication to be feared. Immediate tracheotomy, as in the case described, may have to be considered as the only means to save the child.

21: 321-384 (June) 1923

*Infant Mortality. A. Gismondi.—p. 321.
*Improved Breast Pump. C. Cocchi.—p. 345.

Infant Mortality in Italian Industrial Town.—Gismondi's analysis shows a gradual decline in the child death rate since 1900 in the town of Sampierdarena from 46 to 22 per thousand inhabitants, and of infants less than a year old from 16.1 to 8.3 per cent. of the children born. This formed 52.4 per cent. of the total deaths in children under 13. The population of the town is 62,604, and his charts show the effect of the infant welfare work carried on for the last few years. Another point brought out is that a third of the total child mortality is due to disease of the respiratory apparatus. Child welfare work in general has been directed against disease of the digestive apparatus, and the respiratory apparatus has been comparatively neglected hitherto.

Improved Breast Pump.—The glass receptacle has two outlets, one on each side close to the bottom, forming a long glass tube on each side. The mouth of the jar has a broad flat brim to fit over the breast, and a narrow groove above and below narrows the lumen of the jar near the brim. One of the outlets is fitted into the rubber cork of a nursing bottle. A rubber tube fits over the other outlet, and a vacuum is induced with this tube. The nipple is drawn into the jar and through the narrow portion by the aspiration, and in four or five minutes from 500 to 100 gm. of milk can thus be obtained. The suction and pressure on the nipple reproduce the natural mechanism of the infant's suckling, and the milk is ready for use at once, without decanting.

Archiv für Kinderheilkunde, Stuttgart

72: 241-320 (May 19) 1923

*The Hemoclastic Crisis in Children. R. Kochmann.—p. 242.
Pseudoleukemic Anemia in Twin Infants. E. Marquard.—p. 251.
Inhibiting Influence of—Syphilitic Flocculation on Saponin Hemolysis. Tebbe.—p. 257.
*Scoliosis After Pleurisy in Children. J. Rey.—p. 261.
Clinical Observations on Measles. P. Widowitz.—p. 274.
Present Status of Chronic Adenoiditis. F. Schleissner.—p. 282.

Hemoclastic Crisis in Children.—Kochmann adds confirmatory evidence as to the clinical importance of Widal's hemoclastic crisis in children. He never found it positive in children over 1 year old with healthy kidneys, while it was distinctly positive in the children with liver disease. In

young infants, the "protein-binding" function of the liver (proteopexy) is so inadequately developed that the "immunity" following the crisis lasts only four hours, while in older infants and children it persists for eight hours. The liver of infants with severe nutritional disturbances is so badly damaged that the hemoclastic crisis occurs even after an interval of less than four hours from the last feeding. This experience may have clinical importance, as it suggests defective proteopexic functioning of the liver, and hence a predisposition to toxicosis.

Scoliosis After Pleurisy.—Rey remarks that when the child recovers after pleurisy there is liable to be a tendency to scoliosis from cicatricial shriveling of the pleural adhesions and bands. He was able to reexamine recently 31 of the 62 children with pleurisy with effusion at the Freiburg clinic in recent years. In 27 of the 31 there was scoliosis; in 2 the scoliosis had been present before the pleurisy; in the other 25 the spine was drawn toward the diseased side, the scapula was abnormally low, and the circumference of that side of the chest was smaller than the other. In 10 with extreme scoliosis, the interspaces were abnormally narrow. These experiences warn of the importance of prevention. With rapid resorption of a large effusion, there is always danger of deformity. If practicable, the child should be kept in a plaster bed during the stage of resorption, and this is indispensable when a tendency to scoliosis appears. During convalescence, watch should be kept for any tendency to curvature of the spine later. Systematic breathing exercises are useful. When scoliosis has developed, treatment should be started as early as possible.

Archiv für Verdauungs-Krankheiten, Berlin

31: 127-251 (May) 1923

*Duodenal Diverticula. H. Ohnell.—p. 127.
Etiology of Peptic Affections in Stomach and Duodenum. M. Holzweissig.—p. 175.
*Basis for Protein Therapy of Gastric and Duodenal Ulcer. II. G. Holler and J. Vecsler.—p. 189.
*Sliding and Deep Palpation of the Abdomen. T. Hausmann.—p. 217.
Spasm of Ileum with Cecum Process. T. Bársony.—p. 245.
Hyperbilirubinemia in Migraine. G. Hetényi.—p. 247.

Clinical Importance of Diverticula in the Duodenum.—Ohnell refers only to diverticula not connected with an ulcer, and compares the clinical course with the roentgenograms or operative findings in 34 cases. In 6 cases there was concomitant ulcer; in 5 intestinal dyspepsia or colitis; in 2 pancreatitis; in one the gallbladder was diseased, and there were abnormal gastric secretory conditions in 8. In the total 34 cases pain was prominent in 85 per cent. Vomiting or acid eructations were noted in 44 per cent. There was retention in the diverticulum in 76 per cent. and motor disturbance in stomach or duodenum in 45 per cent. The region of the diverticulum was tender in 29 per cent. The clinical picture generally is that of an ordinary chronic gastric or duodenal ulcer. The diverticulum is usually so inaccessible that radical removal is risky. Internal measures should be directed against the accompanying stomach or intestinal complications.

Protein Therapy of Gastric and Duodenal Ulcer.—Holler and Vecsler argue that the tonus of the vegetative nervous system is regulated by the action of the products of intermediate metabolism. They discuss the physiologic and pathologic manifestations of visceral nerve tonus, with special regard to the origin and treatment of gastric and duodenal ulcer. They call attention in particular to the urinary anomalies in these conditions. Although the parenchyma of the kidneys is sound, the output of salts and water is decidedly modified. This they ascribe to a functional anomaly probably located in the sacral portion of the autonomic nervous system. It yielded to atropin, and, when syphilis was involved, to specific treatment. They add that anomalies of this kind in stomach and kidney function in patients with encephalitis, particularly in those with parkinsonian symptoms, suggest that foci in the central vegetative tracts may entail changes in visceral tonus, and may accompany ulcer formation in stomach and bowel. Experiments indicate that central nervous processes alone may induce ulcer and this localization may be connected with the pupil anomalies often found in nonsyphilitic ulcer cases. There may be intermittent sialorrhea, frequently accompanied and followed by spasm in the throat, esophagus or stomach. This gastric "status neurotonicus" may or may not progress to actual ulceration. Most ulcer patients have a mixed sympathetic and parasympathetic overexcitability. Injury of nerves from some toxin is probably the commonest primary factor in ulcer production.

Differential Diagnosis of Abdominal Tumors.—Hausmann extols anew the advantages of his method of sliding and deep palpation of the abdomen. In a case described, one ovary was fastened to the mesentery and simulated a movable kidney. This is his twelfth article on his *gleit- und tiefenpalpation*, all published in German journals.

Beiträge zur klinischen Chirurgie, Tübingen

129: 483-724, 1923

*Action of Cholagogues. O. Specht.—p. 483.
*Gastric Secretion with Disease in Bile Ducts. G. Düttmann.—p. 507.
*Perforated Gastric and Duodenal Ulcers. W. Speck.—p. 537.
*Treatment of Rectal Cancer. F. J. Kaiser.—p. 595.
Etiology of False Lateral Ventral Hernia. R. Andler.—p. 613.
Ganglions on Peripheral Nerves. E. Reis.—p. 622.
Hereditary Elephantiasis. F. Reich.—p. 627.
Congenital Lockjaw. W. Schmid.—p. 633.
Intra-Abdominal Hemorrhage from Corpus Luteum Simulating Acute Appendicitis. W. Odermatt.—p. 663.
*Pneumoradiography. I. Szabó.—p. 677.
Sudeck's Atrophy of Bone. H. Hilgenreiner.—p. 683.
Spontaneous Hematoma in Abdominal Wall. H. Hilgenreiner.—p. 700.
*Action of Heat on Long Bones. A. Nussbaum.—p. 711.
Resection of the Kidneys. W. Peters.—p. 716.

Experimental Study of Cholagogues.—Specht's chart of the findings in dogs, with a fistula in the common bile duct, under the influence of various alleged cholagogues confirm their possible efficiency, although wide racial and individual differences were manifest. His research demonstrated that secretion of bile and urine proceed entirely independently. Even extreme fluctuations in the amount, specific gravity and sodium chlorid content of the urine occur without being reflected in the bile secretion. None of the alleged cholagogues such as Carlsbad salts, Liebig's meat extract, and agar, had any appreciable influence on bile secretion in his experiments; and sodium salicylate only in amounts that impaired the general health. The bile itself, or its elements, by mouth or injected subcutaneously or by the vein, was the one substance found effectual in increasing the flow of bile. The question now is to find the combination of these elements and the dosage which will induce the maximal effect with the minimal depressing influence on the heart action and destructive action on the blood corpuscles. We must test the biliary acids, alone or in combination, on patients after choledochotomy. His experiments suggest that the cholagogue action of the bile acids continues for several hours.

Liver Functioning and Duodenal and Gastric Secretion with Disease of the Bile Ducts.—Düttmann's research sustains the reliability of the Widal, Rosenthal, von Falkenhausen and Falta's functional liver tests. It confirms further the depressing influence on gastric secretion of disease in the biliary passages. Irreparable hypacidity and hypochlorhydria are entailed by inflammation in the biliary passages, and they persist in more than 50 per cent. of the patients after the operation. The duration of the inflammation and its degree are reflected in the intensity of the secretory deficit in the stomach. As the inflammation generally persists after internal or conservative surgical measures, the effect on gastric secretion keeps up unmodified. Hence the effort to relieve without removing the gallbladder has no justification, so far as the stomach is concerned.

Perforated Gastric and Duodenal Ulcers.—Speck reviews the experiences at the Dresden hospital with 105 cases of this kind since 1900, comparing them with 3,224 he has compiled from the literature. He estimates that perforation occurs in about 10 per cent. of these ulcers. In his 105 cases, men predominated, 3:1, and in the duodenal ulcer cases, 8:1. The clinical picture, the pathology and the outcome are discussed in detail. In 22 recently reexamined cases, 17 of the patients were in perfect health, 2 complained of oppression in the stomach, not impairing the earning capacity. Only one patient has required operation since for hernia in the cicatrix,

and now has symptoms suggesting peptic ulcer. In these cases the ulcer had been merely sutured in, in 3, while in the 16 others this had been supplemented by gastro-enterostomy. Resection of the perforated ulcer was never deemed necessary. He comments on the increasing prevalence of duodenal ulcers. The proportion in former years was 4:1 in favor of the stomach; now it is 2.5:1 in favor of the duodenum. In recent years, the patients with perforated ulcer have been nearly all men. The mortality has dropped from 66 to 42 per cent., or to zero when there is no delay before operating. Five pages of bibliography are appended.

Cancer of the Rectum.—Kaiser advocates invagination amputation and submucous operating in removing the lower end of the rectum. The tube of mucosa can be easily separated from the submucosa, and be drawn out intact, as he explains with ilustrations.

Pneumoradiography.—Szabó expatiates on the advantages and harmlessness of injecting oxygen or carbon dioxid into the bed of the kidney, as he applied it in sixty-two cases (bilaterally in nine).

Action of Heat on Long Bones.—Nussbaum experimented with six frogs, seven guinea-pigs and ten rabbits, applying steam to or freezing the exposed long bone, and then watching whether regeneration was complete enough to ward off spontaneous fracture. The outcome justifies tentative steam treatment of cancer in bone in man, as Wenglowski proposed in 1914. The heat or the freezing kills the vitality of the bone, but this aseptic destruction of bone is followed by complete regeneration. Spontaneous fracture occurred in three cases, but the fracture soon healed. The attempts to correct pseudarthrosis by this means proved futile.

Medizinische Klinik, Berlin

19: 781-816 (June 10) 1923

Manic-Depressive Insanity in General Practice. Rittershaus.—p. 781.
*Chagas' Disease. F. Munk.—p. 784. Conc'n p. 822.
Isolated Progressive Ophthalmoplegia. R. Stanka.—p. 790.
*Resuscitation by Intra-Aortic Injection. J. Tornai.—p. 792.
Incarcerated Obturator Hernia. Pumplun.—p. 795.
Sterilizer for Sputum. G. Heuer.—p. 798.
*Renal Insufficiency. H. Pribram and O. Klein.—p. 799.
Gynecology from Practitioner's Standpoint. E. Runge.—p. 801. Cont'n.
Recent American Works on Obstetrics. Liepmann and Lienig.—p. 802.

Chagas' Disease.—Munk gives his impressions from a trip to Brazil, and especially on the trypanosomiasis with goiter, nervous and heart disturbances to which Chagas has called attention. He suggests that if Chagas is correct in alleging that the goiter is essential to the clinical picture this is an important contribution to the debated question of an infectious origin for endemic goiter. Infection with *Schizotrypanum cruzi* is responsible for the clinical picture, but Munk ascribes the swellings to edema, similar to that in trichinosis and in sleeping sickness. The paralysis is also a consequence of the infection. The unusual prevalence of continuous arrhythmia and weakness of the myocardium in men and women in the forties is probably due to the inflammatory reaction to foci of dead trypanosomes in the heart. These heart disturbances do not develop till many years after the acute phase in childhood. The infection upsets the balance in the endocrine system, and this may explain the development of the goiter. From this standpoint, Chagas' disease is of great significance and he urges search for a causal infection in all foci of endemic goiter.

Intra-Aortic Injection in Resuscitation.—Tornai has applied in twenty-two cases this method of treating collapse, which he prefers to intracardiac injection of the stimulant. The drug is carried at once to the brain and medulla. The method is simpler and less dangerous, he says, than intracardiac injection, but answers the same purpose. He uses a fine needle, 8 or 10 cm. long, slanting at an obtuse angle to the syringe. The needle is introduced on the median line, between the sternum and the trachea, but closer to the trachea, down to the arch of the aorta. When the movements of the needle show that it is in contact with the pulsating wall of the aorta, he pushes it in 0.5 cm. deeper, and injects the caffein, strophanthin, strychnin or other stimulant. The patient reclines in an absolutely horizontal position. In three cases of apoplexy, he withdrew 150-200 c.c. of blood before injecting the stimulant. Withdrawing blood from the aorta in this way, in cases requiring venesection on account of brain symptoms, is probably more effective and safer than venesection. Intra-aortic injection may tide the patient past the danger point in meningitis, encephalitis, uremia, and eclampsia, but its main field seems to be in collapse at operations. Two patients, dying from cancer or liver disease, roused at once from moribund unconsciousness and took nourishment. One survived for twenty-eight hours, the other for four days.

Retention with Insufficiency of the Kidneys.—Pribram and Klein state that with gradually developing insufficiency of the kidneys, the ratio of the urea to the total residual nitrogen in the blood differs in different stages, as they show by concrete examples. In the first, the retention stage, the blood may contain residual nitrogen to the maximal level, with high to maximal urea content, and the urea nitrogen forms a large proportion of the total residual nitrogen. Clinical manifestations may be absent or merely dyspepsia, apathy, etc. The second stage is the phase of toxic destruction of albumin. The residual nitrogen is high to maximal, but the ratio of the urea to the residual nitrogen declines in favor of the increasing nonurea nitrogen. This is the stage of uremia.

19: 817-854 (June 17) 1923

*Cocain Addiction. E. Joel.—p. 817.
Collective Inquiry on Blood Transfusion.—p. 819.
*Treatment of Hemorrhage from the Lung. M. Weiss.—p. 824.
Tumor in the Pituitary. G. Herrmann.—p. 826.
Ponndorf's Scarification Tuberculin Treatment. Unverricht.—p. 828.
*Fatal Ileus from Contrast Suspension. P. Klein.—p. 829.
Action of Potassium on the Heart. F. Turan.—p. 830.
Migration of Scrap of Projectile. R. Kobes.—p. 831.
Luxation and Rotation of Patella. H. Trausner.—p. 832.
*Nature of Bacteriophagy Phenomenon. W. Seiffert.—p. 833.
Tabetic Arthropathy in Ankle After Trauma. H. Engel.—p. 834.
Present Status of Orthopedic Operations. S. Peltesohn.—p. 837.

Cocain Addiction.—Joel has frequently witnessed that cocain addicts with complete change of environment were able to conquer their craving for the drug for months at a time, but when they returned to their former surroundings, they relapsed. This should be borne in mind in planning treatment, especially, he says, as with cocain snuffing there is no acquired poison-fast condition, like that with morphin and alcohol addiction. In several of his cases the cocain addiction could be traced to a physician's prescription for hay-fever. In conclusion he remarks, "I think we owe it to ourselves and to the prestige of our manufacturing chemists to put an end to the peculiar rôle we and they are now innocently playing in that we are supplying with cocain the addicts not only of Germany but of almost the whole of Europe." He adds that the law provides for limiting the import of coca leaves to the actual demand. This gives a lever which will enable the cocain evil to be uprooted.

Treatment of Hemoptysis.—Weiss relates that he has always succeeded in arresting hemorrhage from the lung, even in serious cases, by immediate injection of 6-10 c.c. of 25 per cent. camphorated oil. The patient is kept in bed for two or three days after the last bleeding, and a sand bag or icebag is laid on the side affected to restrict the excursions of the lung. Cold milk, sipped through a straw, is the best food; carbonated waters and carbonated baths seemed to bring on hemorrhage in some cases. A tablespoonful of salt in a glass of water, ingested in fifteen minutes, often proved useful, as also intravenous injection of 10 c.c. of a 10 per cent. sodium chlorid or calcium chlorid solution. The effect wears off in twelve hours. Constriction of the limbs to induce venous stasis with still perceptible pulse for two to six hours often served as a valuable adjuvant. No benefit was observed from gelatin injections, which are painful. Three tablespoonfuls of a 50:300 solution of calcium chlorid should be taken daily from the onset of the hemorrhage. The camphorated oil subcutaneously or intramuscularly is the main reliance; the effect lasts for about twelve hours. He repeats the injection of 6 or 10 c.c. of the 25 per cent. camphorated oil every twelve hours, for a week, gradually decreasing the dose. A single large dose is more effective than when fractioned. Small, recurring hemorrhages can be combated with 0.1 gm. camphor by the mouth three times a day, but injection of 2 c.c. of the 25 per cent. camphorated oil is more effectual.

Ileus from Contrast Suspension. — Necropsy revealed impacted barium sulphate as the cause of the ileus. The usual barium sulphate suspension had been given for roentgen-ray examination of the woman, aged 54, and repeated seven days later, the hysterectomy following in two days. The ileus developed at once, and proved fatal in six days. The two barium sulphate concretions measured 2.2 by 1.4 by 1.2 cm., and had lodged at the sigmoid flexure. Klein has encountered a case in which perforation of a gastric ulcer occurred an hour and a half after the young man had swallowed a suspension of bismuth. He knows of only two other instances of calculus formation from this cause: In Schwarz' case the barium sulphate calculus was pushed along and voided spontaneously by giving more of the suspension. In Kummat's case the bismuth had piled up in a hard mass in the stomach, and he queried whether it is ever safe to give a contrast suspension with stenosis of the pylorus.

Research on Bacteriophagy.—Seiffert passed sterile bouillon through a Berkefeld or Chamberland filter ten times. Then he filtered a d'Herelle lysate, sterilized for three hours at 100 C., and then passed bouillon through the filter, and the bouillon became highly bacteriophagic. This resistance of the lytic agent to heat contradicted all previous research. Then he heated several lysates to 100 C. for an hour. They all became inactive. These entirely inactive lysates were then filtered several times, and by the second to fourth passage they had become highly active as also sterile bouillon filtered after them. These experiences demonstrate that the d'Herelle bacteriophage is resistant to heat. The inactivation by heat is only apparent and transient. It proves, however, that the lytic agent cannot be a ferment or a virus. It seems to be an intermediate product of bacterial metabolism, and this product is able to activate the intrabacterial ferments. The d'Herelle phenomenon is thus an autolytic process.

19: 855-890 (June 24) 1923

Unusual Causes of Protracted Fever. W. Rindfleisch.—p. 855.
Syphilis Refractory to Arsphenamin. M. Jessner.—p. 857.
Collective Inquiry on Blood Transfusion.—p. 860. Cont'n.
Neuritis from Fowler's Solution. H. Scharfetter.—p. 863.
Prophylaxis of Roentgen-Ray Injuries. E. Markovits.—p. 866.
Nature of Hysteric Character. T. Pulvermacher.—p. 867.
Traumatic Hematomyelia. W. Heimann-Hatry.—p. 870.
Traumatic Aneurysm of Internal Circumflex Artery. Dvorak.—p. 871.
Ascarids in Liver. F. Rosenberger.—p. 872.
*Chronic Gastric and Duodenal Ulcer. B. O. Pribram.—p. 872.
Collargol Reaction in Cerebrospinal Fluid and Urine. J. Freundlich.—p. 874.
Fracture of Leg with Tabes and Aneurysm. H. Engel.—p. 875.
Recent Works on Infant Hygiene and Pathology. Rietschel.—p. 876.
Recent Research on Diphtheria. S. Lichtenstein.—p. 878.

Treatment of Chronic Gastric and Duodenal Ulcer.—Pribram insists that the success of shock treatment of gastric and duodenal ulcers does not conflict with the assumption that these ulcers are trophic. By measures to induce shock and hyperemia in recent ulcers he has started them on the road to healing. He has now a record of eighty cases.

19: 891-928 (June 30) 1923

Hypertrophied Prostate in the Elderly. Wossidlo.—p. 891.
*Retention of Testes. K. Büdinger.—p. 893.
*Tics of Organic Origin. J. Gerstmann and P. Schilder.—p. 896.
*Connection Between Hyperglycemia and Hypertension. S. Hetényi.—p. 899.
*Protein Therapy of Gastric Ulcer. F. Hampel.—p. 901.
*Progressive Dystrophy of Muscles. F. Rohr.—p. 903.
*Wassermann Reaction in the Cerebrospinal Fluid. V. Kafka.—p. 906.
Rôle of the Coccygeal Gland in Mammals. Pawloff and Schazillo.—p. 907.
Recent Work on General Pathology. L. Aschoff.—p. 911.

Ectopic Testes.—Büdinger asserts that the testis finds its way into the perineum more often than generally supposed, and that this false passage escaped detection in 29 cases in a recent series of 100 cases in which one or both testes were not in the normal position. In 15 cases only the right testis was in the perineum; in 10 the left, and in 4, both testes. In 2 other cases the testis was in its normal place but the vaginal process had gone astray; in 6 the vaginal process was normally located, while the testis was ectopic. In one case it was located above the symphysis, in 2 close under the skin of the perineum. In 33 cases the testis had worked its way upward between the aponeurosis of the obliquus externus and the superficial fascia. This superficial location is more favorable for reduction of the testis to its normal place than simple retention. There was cancer in one case in these two groups; during the same period 8 cases of cancer in the normally located testis were encountered. In one case, the left testis was in a superficial inguinal false passage, while the right testis was in its normal place and the seat of a sarcoma.

Tics of Organic Origin.—Among the cases described are two in which the multiple tics seemed to be sequelae of epidemic encephalitis.

Connection Between Hyperglycemia and Hypertension.—Hetényi declares that the data which he presents demonstrate that in acute diffuse glomerular nephritis, the high blood pressure and the high sugar content in the blood are elicited by the same factors. They always ran parallel in his extensive and repeated tests.

Protein Therapy for Gastric Ulcer.—Hampel reiterates that protein therapy should be tried in every case of gastric ulcer before considering operative measures. Very fine results are being reported with it.

Progressive Muscular Dystrophy.—Rohr reports a case in a boy, aged 9, in which endocrine insufficiency was evidently a factor. Under careful organ extract treatment, the child made rapid progress. Rohr lists the various symptoms which presumably indicate participation of the different endocrine glands, as a guide to treatment.

The Wassermann Reaction in the Spinal Fluid.—Kafka regards as of great practical importance the attenuation of the Wassermann reaction by inactivating at 56 C. He reports experiences in this line and theorizes to explain the phenomena observed.

Wiener klinische Wochenschrift, Vienna

36: 389-408 (May 31) 1923

*The Urobilin Problem. O. Weltmann.—p. 389.
Diazo-Reaction of Human Blood. A. Leimdörfer and D. Charnass.—p. 393.
*Treatment of Vincent's Ulcerative Stomatitis by Freezing. V. Jelinek.—p. 393.
Importance of Early Operation in Acute Pancreatitis. E. Schwarzmann.—p. 397.

The Urobilin Problem.—Weltmann says that Müller's experiments cannot be taken as proof of the enterogenous origin of urobilin, since urobilinogen is found regularly in the bile of swine. Consequently, the urobilinogen which appears in the urine of persons with the common bile duct obstructed, after ingestion of swine bile, is due to the urobilinogen content of the latter. He adds that urobilinogen is seldom found in the serum in liver disease with jaundice, but it is frequently found in pneumonia and other infections, with tumors, and in severe heart defects. The conditions responsible for the appearance of urobilin in the serum are the inability of the liver to destroy the urobilin that reaches it, and modification of the blood albumin, rendering it physically less capable of binding the urobilin.

Ethyl Chlorid Freezing in Treatment of Ulcerative Stomatitis.—Jelinek states that in 1919 and 1920 he had occasion to treat hundreds of soldiers and civilians with ulcerative stomatitis of the Vincent type of infection with spindle-shaped bacilli and spirochetes. The deeper the material for examination was taken, the purer the cultures of these microorganisms. He treated eighty-two cases by local treatment with ethyl chlorid, and the ulceration promptly subsided. The cure was complete in every case within a few days, while with all other methods of treatment the ulceration dragged along for weeks. To show that the ethyl chlorid did not act chemically, the ulcerations were painted with it several days in succession, without freezing, without results. It acted only in a temperature below Centigrade zero, the spirochetes disappearing after the first freezing, in some cases, while in others a second freezing after twenty-four hours was required. The spirochetes seem peculiarly susceptible to the action of the cold, and he suggests that this ethyl chlorid refrigeration method might prove useful for other spirochete affections, alveolar pyorrhea, gingivitis in scurvy, etc. There were only six relapses among the eighty-two patients thus treated.

Zeitschrift für klinische Medizin, Berlin

97: 1-188 (May 26) 1923

Reaction Capacity in Asthenia. L. Borchardt.—p. 1.
Origin of Heart Sounds. H. Gerhartz.—p. 6.
*Experimental Pyrogallol Anemia. J. Weicksel.—p. 26.
*The Racial Albumin Content of the Erythrocytes. J. Vorschütz.—p. 39.
The Brittle Bone and Blue Sclerotics Question. S. Singer.—p. 43.
*Congenital Myotonia. K. Nissen.—p. 58.
*The Electrocardiogram in Experimental Heart Disease. E. Schliephake. —p. 94.
*Angina Pectoris with Mitral Defect. M. Sternberg.—p. 110.
*Gage for Alveolar Tension. J. Holló and S. Weiss.—p. 131.
Acute Myelosis. A. Hittmair.—p. 138.
*Is the Glucose in Blood Prepared for Oxidation? Büdingen.—p. 147.
*Scurvy an Infectious Disease. S. Peschic.—p. 169.
Electrocardiograms with Needle Electrodes. H. Koenigsfeld and F. Stroebe.—p. 182.
The Blood Platelets in Infectious and Blood Diseases. R. Stahl.—p. 187.

Experimental Anemia.—Weicksel describes the changes in the blood and metabolism in dogs with anemia induced by pyrogallol.

Mechanism of Blood Grouping.—Vorschütz argues that the albumin content of blood cells determines agglutination and grouping and the speed of sedimentation. His research on horse, beef, swine and sheep blood sustains this assumption, as also study of three cases of pernicious anemia and several of bronchitis. The more rapid the sedimentation, the greater the content of albumin in the cells. This high albumin content must be a nucleoproteid that responds to electricity like a globulin body. Serum albumin, like hemoglobin, is indifferent to electricity. The difference between horse and beef erythrocytes is striking in respect to the albumin content.

Congenital Myotonia.—Nissen discusses the hereditary element in Thomsen's disease, and its relation to the mendelian laws of heredity. He gives some genealogic charts and a bibliography of 171 works bearing on congenital myotonia.

The Electrocardiogram in Experimental Aortic Insufficiency and Hypertrophy of the Left Heart.—Schliephake's research was done on rabbits under observation for several months.

Angina Pectoris with Mitral Defect.—The practical conclusion from Sternberg's long and illustrated study of mitral defects, clinical and postmortem, is that digitalis should be given for a long time, with large bleedings by venesection during the attack of angina pectoris.

Determination of Alveolar Tension.—Holló and Weiss describe what they call a simple clinical colorimetric method for determining the alveolar carbon dioxid tension.

Oxidation of Glucose.—Büdingen discusses whether other elements in the blood prepare the glucose for oxidation. He reports experimental research on the speed of its oxidation, and on means to accelerate it as a therapeutic measure.

Scurvy an Infectious Disease.—Peschic states that the great epidemic of scurvy in 1917 in the Belgrade region confirmed the infectious origin of scurvy, and that contagion was from human excreta and water contaminated with the excreta. The incubation was usually seven days, and the causal agent was *Bacillus scorbuti,* of the colon bacilli group.

Zeitschrift für Krebsforschung, Berlin

20: 211-320 (July 13) 1923

*Susceptibility of Centrosome. C. U. Ariens Kappers.—p. 211.
*Tar-Treated Animals. V. E. Mertens.—p. 217.
Follicular Oophoroma. O. Seifried.—p. 236.
*Double Primary Cancer. H. Spranger.—p. 243.
*Theoretical Study of Cancer Formation. A. Greil.—p. 250.

Susceptibility of the Centrosome.—Kappers' research on brain tumors has demonstrated that, at least in nerve tissue, the centrosome is liable to be located in the most exposed part of the cell. It is thus peculiarly exposed to injury from without, and he discusses the importance of this for plastic operations and in tumor production. Certain irritations seem to have an especially deleterious influence on the centrosome.

Tar Cancers.—Mertens refound in internal organs the tar painted on the rabbits' ears. The severest injury was evident in liver and kidneys. Among his 257 tar-treated animals only one developed actual cancer.

Multiple Cancer.—A primary carcinoma in two remote organs was found in six of the 417 cancer cases, at the Charlottenburg Hospital in a recent four and a half year period. One woman aged 63 had a gelatinous adenocarcinoma of the left breast and a basement cell epithelioma in the fundus of the uterus. The breast and the uterus were removed, but the woman died three years later from extensive recurrence of each of the primary cancers. Each then presented the aspect of a primary tumor, one in the bronchus, the other in the colon, but the microscope revealed the gelatinous and basement cell structure of the original growths.

Theoretical Study of Origin of Tumors.—Greil proposes a theory based on the dynamics of development.

Zeitschrift für Urologie, Leipzig

17: 321-384, 1923

The Pioneer in Endoscopy: P. Bozzini, 1773-1809. O. Ringleb.—p. 321.
*False Frenum of the Prepuce. M. Porosz.—p. 331.
*Medical Treatment of Hypertrophied Prostate. E. Moser.—p. 334.
Case of Double Ureters. A. Matusovszky.—p. 340.
*Kidney Tumors in Infants. W. Israel.—p. 345.
*Intake of Water and Urine Production. G. Armbruster.—p. 352.

False Frenum of the Prepuce.—Porosz regards this pseudofrenum as a relic of some inflammatory process, and urges the necessity for severing the fold or folds binding down the prepuce. Although brief, his communication is illustrated.

Medical Treatment of Hypertrophied Prostate.—Moser has been successful in treating disturbances from Hirschsprung's disease, hypertrophied prostate, and similar affections in which spastic contraction of muscular tissue is more or less of a factor. By local treatment with a sedative to relax the muscular contraction, the whole disturbance may subside below the level of appreciable symptom production. He here describes six typical cases of hypertrophied prostate which confirm the important share of spastic contraction of the prostate itself and of the adjoining musculature of the urethra and bladder in the clinical picture. Eliminating this element by injecting procain into the urethra or introducing it in a suppository into the rectum (0.1 gm. eucain), or both, repeating daily or on alternate days, materially reduced the size of the tumor, as a rule, and micturition returned to clinically normal conditions. No other treatment was given, not even sitz baths. By systematic sedative treatment in this way, he says, the number of cases of hypertrophied prostate requiring operative relief will be materially reduced.

Kidney Tumors in Children.—Israel says that a little girl is now in good health two years after removal of a large adenosarcoma of the left kidney at the age of 12 months. It had caused no symptoms, and the urine showed merely a trace of albumin, a few leukocytes and granular casts. About the same time he removed an adenosarcoma from the left kidney of a boy infant, aged 14 months, but this tumor had caused grave symptoms, and the child died from metastasis in two or three months. There had been three periods of fever and occasional hematuria, during the five months before the operation, that were interpreted as pyelocystitis.

Urine Production in Connection with Intake of Water.—Armbruster comments on the retention in the lymphatics of water injected intravenously. This is in marked contrast to the way in which water is speedily voided when an analogous amount is taken into the stomach. He has utilized this difference in treatment; in one case menstruation was restored in an insane girl by the increase in the blood pressure which followed intravenous injection of sodium chlorid solution. He explains further that, in the embryo, the umbilical cord serves for a secondary kidney.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2081-2180 (May 19) 1923

The First Park Daytime Sanatorium in the Netherlands. P. Muntendam.—p. 2084.
*Tuberculous Myocarditis. A. J. F. Oudendal.—p. 2087.
*Acute Peritonitis in Infants. M. C. M. Smid.—p. 2095.
*Research on the Bacteriophage. II. Janzen and Wolff.—p. 2107.
*Treatment of Empyema. P. R. Michael.—p. 2113.
*Insulin from Fish. D. E. Schouten.—p. 2118.
Chronaxia as Gage of Excitability of Tissue. van der Heijde.—p. 2119.

Spontaneous Rupture in Tuberculous Myocarditis.—Oudendal describes the findings in the cadaver of a young Chinese

woman who died soon after being picked up in the street unconscious, with convulsions. His four plates show the tuberculous myocarditis and the ruptured aneurysm in the wall of the left ventricle. The chain of tracheal, bronchial, and cardiac lymph glands showed the progress of the invasion which had terminated in diffuse tuberculosis of the myocardium.

Acute Peritonitis in Infants.—Smid analyzes 14 cases of acute peritonitis in infants, comparing the necropsy findings with the clinical picture. The onset was acute and stormy in all; 2 had persistent diarrhea, 2 diarrhea only at first; others had tenacious constipation, or alternation of diarrhea and constipation, but 3 had normal stools throughout. All but 2 vomited; in 5 there was bile in the vomit. The abdominal walls were taut in 10, but only 5 presented much meteorism; in 3 the skin of the abdomen was cyanotic; in 2 the abdomen was evidently painful. Dulness was pronounced in 2, with slight dulness in one. The urine showed albumin and many leukocytes; the temperature was nearly normal in some; in others there was fever, intermittently or remittently high. The clinical picture differs thus materially from that of acute peritonitis in older children and adults. With acute gastroenteritis in infants, he has found the abdominal wall usually relaxed and sunken. In the 2 cases of pneumococcus peritonitis, the stools were normal. The peritonitis was traceable to a hernia in one case; invagination in 2; infection from the umbilicus in 2; enteritis in 2, and a lung process in 3.

Research on the Bacteriophage.—Janzen and Wolff found staining the culture an aid in their study of bacteriophagy. They experimented with different disinfectants, and found that some destroyed the bacteria but left the bacteriophage unharmed. It seems to be extraordinarily resistant to chemical action, although some of the disinfectants temporarily checked its proliferation while others promoted it. The inhibition seemed to wear off in a few days.

Treatment of Pleural Empyema.—Michael has been applying the Bülau method of drainage with aspiration in a recent series of twenty-two cases of acute empyema. All recovered except three patients with septic influenza who died in a few hours after entering the hospital, and one child with bilateral pneumonia. The ages ranged from 2 to 58 years, and the patients were in the hospital from two to twenty weeks. The empyema was of one to eight weeks' standing. This aspiration treatment not only clears out the pus but aids in the reexpansion of the lung.

Insulin from Fishes.—Schouten calls attention to the fish *Cyclopterus lumpus*, the sea-owl, which has an organ between the pancreas and liver that seems to be composed entirely of tissue showing the structure of the islands of Langerhans. He found it in eight specimens of this fish, and made an extract of this organ, intending to test its action on the blood sugar, but never carried the research farther.

1: 2201-2308 (May 26) 1923

*President's Address at Orthopedic Congress. **Murk Jansen.**—p. 2202.
*Bifurcation Treatment of Dislocation of Hip Joint. A. Lorenz.—p. 2207.
Orthopedic Experiences from the War. Sir Robert Jones.—p. 2215.
*Unrecognized Congenital Subluxation of Hip Joint. F. Calot.—p. 2223.
*Fundamental Laws Underlying Transplantation of Bone. F. H. Albee.—p. 2230.
*Treatment of Infantile Paralysis. K. Biesalski.—p. 2234.
Plastic Operations on Joints. H. Spitzy.—p. 2239.
Plastic Operations on Joints. V. Putti.—p. 2245.
Provisions for the Disabled in Great Britain. Sir Robert Jones.—p. 2254. Idem in Germany. K. Biesalski.—p. 2260. Idem in Vienna. H. Spitzy.—p. 2266.
*Legislation on Rehabilitation of the Disabled. F. H. Albee.—p. 2270.
Provisions for the Disabled in the Netherlands. J. van Assen.—p. 2273.

Orthopedic Surgery.—The thirteen articles in this number were read at the International Orthopedic Congress at Amsterdam on the twenty-fifth anniversary of the Netherlands Orthopedic Society.

Treatment of Dislocation of the Hip Joint.—Lorenz describes a new technic for treating irreducible acquired or congenital luxation of the hip joint. He calls it the bifurcation method, as he carves out a new head, on a level with the acetabulum, by a slanting osteotomy of the femur above the new head. The new head is fitted in the acetabulum, and the former head grows to its neck in time. The upper end of the femur thus has a Y shape, as his illustrations show, and the leg is shortened to the extent of the difference between the two tines of the fork. He advocates this method not only as the last resource in irreducible cases of pathologic dislocation, but also in pseudarthrosis, and in recurring dislocation in coxa vara. Notwithstanding the excellent results, he prefers his "inversion" method in simpler cases. With this, the flexion-adduction contracture is overcome by stretching or severing the adductors. This transforms the adduction into extreme abduction. This draws the ilium downward and thus gives a bone support to the top of the trochanter major. By changing the typical flexion of the hip joint into extreme extension, the weight of the body is thrown partially on the anterior portion of the ligament apparatus, the strongest in the body. By this means the soft parts in the back of the joint are relieved from excessive traction and the cause of the pain is thus removed. This inversion technic requires merely a few days of bed rest, but much depends on the aftercare. If it fails to relieve permanently, it is a useful preliminary to the bifurcation operation. He has applied the latter in sixty cases, and some of the patients show no signs of crippling, and can run, jump and climb mountains. The operation can be done without exposing the joint and is absolutely harmless, he says. The extra-articular bone implantation methods can be applied only to young and vigorous patients, while the bifurcation method is applicable at any age, and to correct crippling from tuberculosis or osteomyelitis and to relieve pain with arthritis deformans.

Deforming Arthritis in the Hip Joint.—Calot presents data and arguments to show that all types of arthritis deformans restricted to one or both hip joints, in the young or the aged, are the results of congenital subluxation.

Principles for Bone Transplanting.—Albee analyzes what he has learned from 3,000 osteoplastic operations.

Physiologic Principles in Treatment of Infantile Paralysis.—Biesalski emphasizes among other points that the action of a muscle is entirely different with a normal and a crippled joint, and the points to which electricity can be applied with benefit are liable to be entirely different. The usual points may be inert, but remarkable improvement follows stimulation of the special individual points. He urges study of orthopedic physiology to realize physiologic orthopedics, and hails the important works of Murk Jansen, Lange, Spitzy, Putti and others in this line as remarkably encouraging.

Legislation on Rehabilitation of the Disabled.—Albee described the organization and workings of the 2,000 bed military orthopedic hospital in New Jersey, and the law adopted by the state in 1918 providing for orthopedic treatment for the disabled in industrial and other accidents. He added that thirty-three other states have passed similar laws since.

1: 2353-2452 (June 2) 1923

New Medical Dictionary. G. van Rijnberk.—p. 2354.
*Fatalities After Operations on Nose. H. Burger.—p. 2356.
*Erysipelas. D. Herderschée.—p. 2367.
*Umbilical Colic in Children. H. Timmer.—p. 2378.
Protein Therapy Found Ineffectual in Treatment of Hemoptysis. T. Meuwissen and T. Thuis.—p. 2384.
Inversion of Appendix in Cecum. J. F. O. Huese.—p. 2393.
The Wounded in the Amsterdam Hospitals After Naval Battle in 1781. G. Hellinga.—p. 2395.

Fatalities After Operations on the Nose.—Burger has compiled sixty-six cases and comments on Loeb's collection among American surgeons of 190 fatalities after operations on the nose and 142 on the throat. He concludes his analysis with seventeen rules that should always be borne in mind in operating on the nose, and mentions in addition Ballenger's warning not to operate endonasally in cases of violent headache unless lumbar puncture shows that there is no danger of already existing meningitis. One of his rules is that if the physician causes pain in introducing the nasal speculum, this demonstrates that he is too clumsy to attempt even to probe the nose-frontal sinus passage. Consultation with the family physician, the internist, is always advisable.

Erysipelas.—Herderschée relates that a chill ushered in the erysipelas in 57 per cent. of the 605 cases of erysipelas of

the face in his service in the last six years, and in 50 per cent. of the 604 with erysipelas elsewhere on the body. The pain was sometimes so intense with erysipelas of the face that trigeminal neuralgia was assumed in the cases in which redness and swelling were late in appearing. The mortality was only 5.2 per cent. among the men and 6.1 per cent. among the women with erysipelas of the face. With erysipelas elsewhere, the figures were 13.5 and 14.1 per cent. Four of the 9 young infants and 8 of the 23 in these two classes died, as also 10 of the 48, and 33 of the 85 aged above 70. In 18.5 per cent. of the face erysipelas cases there was a history of previous attacks, as also in 14.4 per cent. of other localizations of erysipelas; in some cases it had returned ten times, or every year. Herderschée's analysis shows that erysipelas deserves more consideration than is generally accorded, and requires special care in prophylaxis. The skin in heart and kidney disease seems to be peculiarly predisposed to erysipelas, and the heart and kidney affections are aggravated by it.

Umbilical Colic in Children.—Timmer compares the conflicting publications on this subject, but is convinced of the reality of a nervous and recurring form of pains in the umbilical region which have no connection with the appendix, helminths, enteritis, tuberculous glands or purpura. The attacks of pain are brief, the child seems normal in the intervals, and the abdomen seems normal except for a little tenderness at certain symmetrical points or on the median line. Even if the child is neurotic, if the pain is continuous and the temperature rises slightly, the disturbances cannot be regarded as "nervous umbilical colic" alone.

Acta Chirurgica Scandinavica, Stockholm

56: 1-102 (July 5) 1923

*Hallux Valgus. T. Sandelin.—p. 1.
*Chronic Tuberculosis of the Kidneys. G. Söderlund.—p. 27.
*Bone Grafts. A. Troell.—p. 59.
*Short Notes of Rare or Obscure Cases. G. Nyström.—p. 73.

Hallux Valgus.—Sandelin found hallux valgus in 30 per cent. of 3,200 feet examined at Helsingfors, including 30 in infants and 350 in persons over 60. Of the 150 patients requiring operative relief, only 10 per cent. were men. Recent reexamination of 107 in this operative group, comparing them with others, has demonstrated that as the hallux valgus begins to be painful, the patient walks more on the side of his foot to protect the sensitive exostosis against pressure and trauma. The weight of the body is thus thrown on the fifth metatarsal bone. This is unable to stand the strain, the ligaments stretch, and the arch of the foot gives way. The anterior points now supporting the foot are not modified by resecting the head of the first metatarsal bone. This, however, brings the deformed joint back to clinically normal conditions, and the whole disturbance gradually corrects itself. Patients in this category were always pleased with the result of the operation. On the other hand, the head of the first metatarsal bone should not be removed when the anterior arch of the foot is intact and the hallux valgus has not caused subjective disturbance. Removal of the head of the first metatarsal bone, in these circumstances, throws the weight on new points of support, and severe pain in the under part of the foot is almost certain to result. His experience in this class of cases has been very discouraging. He now advises against an operation in such cases, or applies Schede's operation. Recurrence may be anticipated with this. He applied this technic in twenty cases, and the Hueter method in the others. The hallux valgus was bilateral in all but six of the 106 operative cases. (In German.)

Chronic Tuberculosis of the Kidneys.—Söderlund discusses (in English) the primary localization of the tuberculous process. The microscopic findings in four cases, described in detail, testify that the primary focus had developed in one pyramid and long remained circumscribed there. When this focus finally broke through into the renal pelvis, a superficial tuberculous process rapidly developed throughout the renal pelvis. The primary, hematogenous process had probably persisted, completely shut off, for months or years, causing no symptoms except possibly slight pain in the back or kidney region.

Bone Grafting.—Troell reports the outcome in thirteen bone transplanting operations on cats. He also experimented with ivory. The article is in English and profusely illustrated.

Short Notes of Rare or Obscure Cases.—Under this heading Nyström offers the *Acta* as a forum for brief reports of surgical work making no pretensions to study of the literature or extensive material. The nineteen such reports given herewith refer to operations on the head, digestive, biliary and urinary apparatus, intestines, hernia, and the extremities, nearly all in English. Among them is Karstad's report of successful operative treatment for perforating duodenal ulcer in two boys, aged 10 and 12. In both, after retrocolic gastroenterostomy the horizontal portion of the duodenum was invaginated.

Hygiea, Stockholm

85: 353-400 (May 16) 1923

*Results of Gallstone Operations. K. Gramén.—p. 356.
Physiologic Adjuvant in the Rest Cure of Pulmonary Tuberculosis. A. Knopf.—p. 365.
Error in Thought and the Conventional. S. Hedenberg.—p. 379.

Investigation of Condition of Patients After Gallstone Operations at the Serafimer Hospital.—Gramén, in 1913 and 1922, investigated the health of the survivors of 313 patients, 68 men and 266 women, operated on for gallstones during the period from 1891 to 1912, with a mortality of 18 and 13 per cent., respectively, for men and women, lowered to 10 per cent. during the last five years. His purpose was to determine the relative merits of three operative methods. Cholecystectomy had been used on 238, with 29 deaths, 128 survivals in 1913 and 77 in 1922. The figures for cholecystostomy were 62 operations, 11 deaths, 34 and 18 survivals, respectively, and for cholecystotomy 12 operations, 2 deaths with 5 and 2 survivals, respectively. The personal examination or correspondence indicated good health in 72 per cent.; fairly good in 23, and poor in 5 per cent. This last group included 10 cholecystectomies (77 surviving in 1922); 10 cholecystostomies (18 surviving in 1922), and 2 cholecystotomies (2 surviving in 1922).

85: 449-496 (June 15) 1923

*Stethoscopy and Roentgenoscopy in Tuberculosis. Tillman.—p. 457.

Comparative Study of Auscultation and Roentgen-Ray Findings in Diagnosis of Tuberculosis of the Lungs in Adults.—Tillman says that, from blunders in diagnosis, 25 per cent. of patients received at hospitals for tuberculosis are not afflicted with that disease, or the tuberculosis has been treated for other lesions until it has advanced to an incurable stage. He has made a comparative clinical roentgenographic classification of 300 patients in the next largest tuberculosis hospital in Sweden. He found a fair agreement between the stethoscope and the roentgen examination in 25 per cent. of the cases where roentgenography had been employed to corroborate the clinical diagnosis, while roentgenography gave more instructive findings in 175 cases out of 243. It was surpassed by the stethoscope findings in only six cases. The roentgen procedure is, however, only a valuable auxiliary means of diagnosis. It should not be relied on alone.

85: 497-544 (June 30) 1923

*Methods for Determining Gastric Acidity. E. Wolff.—p. 497.
Optical Instruments Enlarging Process. H. Gertz.—p. 518.

Ion Method for Determining the Acidity of the Gastric Juice.—Wolff says that "free hydrochloric acid" is a misleading term, not based on physiologic facts, and that none of the published methods for its titration gives results, correct in principle. The hydrochloric acid in the gastric juice, in excess of that bound by albumin, is dissociated into hydrogen and chlorin ions, while acid salts and organic acids and the bound acid also generate a small amount of hydrogen ions. The sum total of these hydrogen ions represents the actual acidity. He has constructed a table in which the color variations of Lanz's titration method, after some changes, have been translated to variations from normal of hydrogen ion concentration. By this method he has examined forty stomach contents of about thirty patients with various gastric and other diseases, comparing the results with the amounts found through titration of the free hydrochloric acid, and found these too high, as a rule.